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United States
Department of
Agriculture

Soil
Conservation
Service

Spokane,
Washington



Water Supply Outlook for Washington

as of JUNE 1, 1985



TO RECIPIENTS OF WATER SUPPLY OUTLOOK REPORTS:

Most of the usable water in western states originates as mountain snowfall. This snowfall accumulates during the winter and spring, several months before the snow melts and appears as streamflow. Since the runoff from precipitation as snow is delayed, estimates of snowmelt runoff can be made well in advance of its occurrence. Streamflow forecasts published in this report are based principally on measurement of the water equivalent of the mountain snowpack.

Forecasts become more accurate as more of the data affecting runoff are measured. All forecasts assume that climatic factors during the remainder of the snow accumulation and melt season will interact with a resultant average effect on runoff. Early season forecasts are therefore subject to a greater change than those made on later dates.

The snow course measurement is obtained by sampling snow depth and water equivalent at surveyed and marked locations in mountain areas. A total of about ten samples are taken at each location. The average of these are reported as snow depth and water equivalent. These measurements are repeated in the same location near the same dates each year.

Snow surveys are made monthly or semi-monthly from January 1 through June 1 in most states. There are about 1900 snow courses in Western United States and in the Columbia Basin in British Columbia. Networks of automatic snow water equivalent and related data sensing devices, along with radio telemetry are expanding and will provide a continuous record of snow water and other parameters at key locations.

Detailed data on snow course and soil moisture measurements are presented in state and local reports. Other data on reservoir storage, summaries of precipitation, current streamflow, and soil moisture conditions at valley elevations are also included. The report for Western United States presents a broad picture of water supply outlook conditions, including selected streamflow forecasts, summary of snow accumulation to date, and storage in larger reservoirs.

Snow survey and soil moisture data for the period of record are published by the Soil Conservation Service by states about every five years. Data for the current year is summarized in a West-wide basic data summary and published about October 1 of each year.

COVER PHOTO: "Snow scene along trail to Mt. Hood test site snow course"

PUBLISHED BY SOIL CONSERVATION SERVICE

The Soil Conservation Service publishes reports following the principal snow survey dates from January 1 through June 1 in cooperation with state water administrators, agricultural experiment stations and others. Copies of the reports for Western United States and all state reports may be obtained from Soil Conservation Service, West Technical Service Center, Room 510, 511 N.W. Broadway, Portland, Oregon 97209.

Copies of state and local reports may also be obtained from state offices of the Soil Conservation Service in the following states:

STATE	ADDRESS
Alaska	Room 129, 2221 East Northern Lights Blvd., Anchorage, Alaska 99504
Arizona	Room 3008, Federal Building 230 N. First Ave., Phoenix, Arizona 85025
Colorado (N. Mex.)	P.O. Box 17107, Denver, Colorado 80217
Idaho	Room 345, 304 N. 8th St., Boise, Idaho 83702
Montana	P.O. Box 98, Bozeman, Montana 59715
Nevada	P.O. Box 4850, Reno, Nevada 89505
Oregon	1220 S. W. Third Ave., Portland, Oregon 97204
Utah	4402 Federal Bldg., 125 South State St., Salt Lake City, Utah 84147
Washington	360 U.S. Court House, Spokane, Washington 99201
Wyoming	P.O. Box 2440, Casper, Wyoming 82601

PUBLISHED BY OTHER AGENCIES

Water Supply Outlook reports prepared by other agencies include a report for California by the Snow Surveys Branch, California Department of Water Resources, P.O. Box 388, Sacramento, California 95802 — for British Columbia by the Ministry of the Environment, Water Investigations Branch, Parliament Buildings, Victoria, British Columbia V8V 1X5 — for Yukon Territory by the Department of Indian and Northern Affairs, Northern Operations Branch, 200 Range Road, Whitehorse, Yukon Territory Y1A 3V1 — and for Alberta, Saskatchewan, and N.W.T. by the Water Survey of Canada, Inland Waters Branch, 110-12 Avenue S.W., Calgary, Alberta T3C 1A6.



WATER SUPPLY OUTLOOK FOR WASHINGTON

and

FEDERAL-STATE-PRIVATE COOPERATIVE SNOW SURVEYS

ISSUED BY

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Chief

**SOIL CONSERVATION SERVICE
WASHINGTON, D.C.**

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FORECASTS BY

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PORTLAND, OREGON**

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WATER SUPPLY OUTLOOK

State of Washington

JUNE 1, 1985

Stored irrigation water is the only bright spot in the water supply outlook for the State of Washington. Reservoir storage in the Yakima Basin is above average for June 1. Snow cover statewide is near 60% of average. Of the 36 SNOTEL sites in Washington, 20 sites are bare of snow as of June 1st. In 1984 only three of the sites reported no snow on June 1. Near average temperatures for May have kept streamflows to about normal.

THIS IS THE LAST WATER SUPPLY REPORT FOR 1985. IF YOU WISH TO RECEIVE THESE
REPORTS NEXT YEAR, PLEASE RETURN THE BACK COVER OF THE MAY 1 REPORT, IF YOU
HAVE NOT ALREADY DONE SO.

SNOW COVER

The June 1 report contains only the data on snow courses actually read this month. This consists of 15 manual snow course readings and 36 SNOTEL readings. Many of the basins have no snow courses being read this month. For the basins where an average can be computed the snow cover is down from last month. For example the Pend Oreille last month was 91% this month its 65%, the Spokane River last month 104% this month 66%.

PRECIPITATION

Precipitation was below average over most of the state, with the exception of the Okanogan River at 110% of normal. Northeastern Washington had 73% of average, while the Southeastern area had 99%. The southwest area had the lowest average with 60% of normal precipitation falling in May. The northwest side of the Cascades was also below average with 78%.

RESERVOIR STORAGE

Washington's stored water supplies are the only bright spot where irrigators are concerned. Irrigation reservoirs are storing 933,100 acre feet of water in the Yakima, 102% of normal. The reservoirs in the Okanogan Irrigation District are above average at 120%. Lake Chelan at 428,200 acre feet, is 95% of normal. Power reservoirs in the Skagit area are at 99% of normal up from 66% of average for May 1.

STREAMFLOW

Temperatures during May returned to near normal over most of the state with the exceptions being the Omak area with 5 degrees above normal. Streams flows in the state had the following average flows for May; the Pend Oreille River 97%, Spokane River 101%, Yakima River 79%, the Wenatchee River at 94%, the Walla Walla River had 85%, the Cowlitz River had 126%.

RESERVOIR STORAGE - 1000 Acre Feet

BASIN OR STREAM	RESERVOIR	USABLE <u>1/</u> CAPACITY	1985	Measured (MAY 1) 1984	1983	Normal*
<u>COLUMBIA</u>						
Spokane	Coeur d'Alene Lake	225.1	262.0	289.5	235.2	225.0
Columbia	Franklin D. Roosevelt Lake	5232.0	1661.6	2389.3	2350.1	2565.6
Columbia	Banks Lake	714.9	685.5	674.8	648.0	406.2
Okanogan	Conconully Reservoir	13.0	11.8	13.3	13.5	9.1
Okanogan	Conconully Lake	10.5	10.5	10.4	10.4	9.4
Chelan	Lake Chelan	676.1	428.2	341.8	566.0	450.6
<u>YAKIMA</u>						
Yakima	Keechelus Lake	157.8	154.0	157.2	156.8	139.6
Kachess	Kachess Lake	239.0	236.7	238.2	238.6	217.1
Cle Elum	Lake Cle Elum	436.9	352.4	421.8	435.8	367.9
Bumping	Bumping Lake	33.7	32.8	33.6	33.6	25.4
Tieton	Rimrock Lake	198.0	157.2	195.0	195.0	160.2
<u>PUGET SOUND</u>						
Skagit	Ross Reservoir	1404.1	1011.5	921.5	1001.7	1033.9
Skagit	Diablo Reservoir	90.6	86.8	82.9	85.9	86.1
Skagit	Gorge Reservoir	9.8	8.2	7.4	7.4	8.3

1/ Based on Active Storage
 * 15-yr. Average 1963-1977

COMPARISON OF SNOW COVER WITH THAT OF PREVIOUS YEARS

The following tabulation of washington stream basins presents the water content of the snow about MAY 1, 1985, as percent of the same date in 1984 and average of record.

Tributary Basin	No. of Courses	1985 Snow Water Expressed as percent of	
		1984	Average 1961-80
<u>UPPER COLUMBIA BASIN</u>			
Pend Oreille	4	63	65
Kettle	0		
Colville	0		
Spokane	2	74	66
Okanogan	0		
Methow	1		
Chelan			
Entiat	2		
Wenatchee	2	56	55
Yakima	5		
Ahtanum	0		
<u>LOWER COLUMBIA BASIN</u>			
Mill Creek	0		
Cowlitz	2		
<u>PUGET SOUND</u>			
White	1		
Green	0		
Snoqualmie	0		
Skykomish	2	56	55
Skagit	0		
Baker	0		
<u>OLYMPIC PENNINSULA</u>			
Morse	0		
Elwha	0		
Dungeness	0		

PRECIPITATION 1/

Division Average Observations and Departures

Drainage Divisions	Fall		Winter		Spring	
	Sept-Oct Observed	1984 <u>2/</u> Departure	Nov. 1984 - Observed	Mar. 1985 <u>2/</u> Departure	Apr-May 1985 Observed	Departure
Northeastern Wash	1.83	-0.65	9.02	- 0.23	1.72	-1.24
Southeastern Wash	2.22	-0.29	10.00	- 0.20	2.25	-0.66
East Slope Cascades	3.24	-1.51	20.04	- 7.31	3.13	+0.11
North Central Wash	1.54	-0.05	4.78	- 1.58	1.28	-0.48
Northwest Cascades	11.98	-1.23	40.18	-15.1	9.9	+0.21
Southwest Cascades	8.89	-4.59	28.96	-11.51	4.92	-1.9

Northeastern Washington	- Lower Spokane, Colville, Sandpoil, and - Lower Kettle Drainages
Southeastern Washington	- Touchet, Tucannon, and Palouse Drainages
East Slope Cascades	- Yakima, Wenatchee, and Chelan Drainages
North Central Washington	- Methow and Okanogan Drainages
Northwest Slope Cascades	- Puget Sound Drainages
Southwest Slope Cascades	- Lower Columbia Drainages

1/ - Preliminary analysis by National Weather Service from data furnished by Meteorological Services of Canada and the National Weather Service.

2/ - Departure from 15-year (1958-1972) drainage division average.

SNOW DATA TO JUNE 1, 1985

SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (Inches)	
NAME	Number	Elevation				Last Year	Average *

UPPER COLUMBIA DRAINAGEPEND OREILLE RIVER

Hoodoo Basin	15C10	6000	5/29	46	26.0	35.8	36.3
Hoodoo Creek	15C01	5900	5/29	50	28.6	31.6	35.6
Lookout	15B02	5250	5/31	12	6.4	9.0	13.3
Schweitzer Ridge	16A05	6100	5/29	26	13.4	40.6	29.9

KETTLE RIVERCOLVILLE RIVEROMAK LAKE, TWIN LAKESSPOKANE RIVER

Lookout	15B02	5250	5/31	12	6.4	9.0	13.3
Lost lake	15B14A	6000	5/31	65	31.2	42.1	43.4

NEWMAN LAKEOKANOGAN RIVERMETHOW RIVERCHELAN LAKE BASINENTIAT RIVER

Pope Ridge	20B20	3450	5/30	0	0.0		
Shady Pass	20A37	6200	5/30	0	0.0	21.6	20.4

WENATCHEE RIVER

Stevens Pass	21B01	4070	5/30	51	26.5	37.3	35.8
Stevens Pass Sand Shed	21B45	3700	5/30	2	1.2	12.3	14.2

COLOCKUM CREEK

Trough #2(SP)	20B25	5310	6/01		0.0 sp	0.0	0.0
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SQUILCHUCK CREEKSTEMILT CREEK

Average based on 1961 1980 averages
s SNOTEL data

SNOW DATA TO JUNE 1, 1985

SNOW			THIS YEAR			PAST RECORD	
DRAINAGE BASIN and/or SNOW COURSE			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (Inches)	
NAME	Number	Elevation				Last Year	Average *

YAKIMA RIVER

Bumping Lake Old	21C08	3450	5/30	0	0.0		
Bumping Lake New	21C36	3400	5/30	0	0.0		
Cayuse Pass	21C06	5300	5/29	114	62.9		
Tunnel Avenue	21B08	2450	5/29	0	0.0		
White Pass E. Side	21C28	4500	5/30	6	3.0		

LOWER COLUMBIA DRAINAGEAHTANUM CREEKMILL CREEKCOWLITZ RIVER

Cayuse Pass	21C06	5300	5/29	114	62.9		
White Pass E Side	21C28	4500	5/30	6	3.0		

PUGET SOUND DRAINAGEWHITE RIVER

Cayuse Pass	21C06	5300	5/29	114	62.9		
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GREEN RIVERSNOQUALMIE RIVERSKYKOMISH RIVER

Stevens Pass	21B01	4070	5/30	51	26.5	37.3	35.8
Stevens Pass Sand Shed	21B45	3700	5/30	2	1.2	12.3	14.2

SKAGIT RIVERBAKER RIVERDUNGENESS RIVERMORSE CREEKELWHA RIVERWYNOOCHEE RIVER

+ Aerial stadia observation

Average based on 1961-1980 average

SNOTEL READINGS JUNE 1, 1985

SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (Inches)	
NAME	Number	Elevation				Last Year	Average

PEND OREILLE RIVER

Bunchgrass Meadows	17A01	5000	05/15		18.5	27.5	
			05/30		0.0	20.7	14.0

OKANOGAN & METHOW RIVERS

Harts Pass	20A05	6500	05/15		42.7	44.0	
			05/30		18.2	41.5	33.0
Salmon Meadows	19A02	4500	05/15		0.0	0.0	
			05/30		0.0	0.0	

CHELAN LAKE BASIN

Lyman Lake	20A23	5900	05/15		43.9	72.6	
			05/30		32.5	74.8	74.8
Mirror Lake	20A39	5600	05/15		19.0	32.8	
			05/30		11.9	31.1	30.3
Park Creek Ridge	20A12	4600	05/15		27.6	32.8	
			05/30		0.0	24.4	17.6
Rainy Pass	20A09	4780	05/15		33.1	34.0	
			05/30		18.4	32.7	24.6

ENTIAT RIVER

Pope Ridge	20B20	3450	05/15		.3	0.0	
			05/30		0.0	0.0	0.0

WENATCHEE RIVER

Blewett Pass	20B02	4270	05/15		.4	1.0	
			05/30		0.0	1.5	0.4
Lyman Lake	20A23	5900	05/15		43.9	72.6	
			05/30		32.5	74.8	74.8
Stevens Pass	21B01	4070	05/15		30.4	32.7	
			05/30		0.1	22.7	21.0
Trough # 2	20B25	5300	05/15		1.0	0.0	
			05/30		0.0	0.0	0.0

COLOCKUM CREEK

Trough # 2	20B25	5300	05/15		0.1	0.0	
			05/30		0.0	0.0	0.0

STEMILT CREEK

Upper Wheeler	20B07	4400	05/15		0.0	2.4	
			05/30		0.0	0.0	0.0

SNOWEL READINGS, JUNE 1, 1985

SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (Inches)	
NAME	Number	Elevation				Last Year	Average *

YAKIMA RIVER

Big Boulder Creek	21B09	3200	DISCONTINUED				
Bumping Ridge	21C38	4600	05/15		24.9	28.2	
			05/30			22.4	5.6
Corral Pass	21B13	6000	05/15			7.2	
			05/30				11.1
Fish Lake	21B04	3371	05/15		24.6	32.2	
			05/30		0.0	16.7	16.7
Green Lake	21C10	6000	05/15		10.8	20.3	
			05/30		0.0	11.9	12.6
Grouse Camp	20B11	5385	05/15		0.1	11.1	
			05/30		0.0	0.0	0.5
Morse Lake	21C17	5400	05/15		42.1	23.2	
			05/30		24.0	46.7	53.5
Sasse Ridge	21C40	4400	05/14		14.5		
			05/30		0.0		
White Pass E. Side	21C28	4500	05/15		19.3	23.1	
			05/30		5.7	18.0	12.3

ATHANUM CREEK

Green Lake	21C10	6000	05/15		10.8	20.3	
			05/30		0.0	11.9	12.6

TOUCHET RIVER

Touchet # 2	17C5	5530	05/15		24.7	26.4	
			05/30		0.0	9.9	9.7

LEWIS RIVER

June Lake	22C09	3200	05/15		26.5		
			05/30		0.0		
Lone Pine Shelter	21C26	3800	05/15		42.6	39.2	
			05/30		25.4	36.1	18.9
Plains of Abraham	22C01	4400	05/15		83.7	99.6	
			05/30		44.5	73.1	41.7
Sheep Canyon	22C10	4050	05/15		45.9	44.7	
			05/30			36.9	36.9
Spencer Meadow	21C20	3400	05/15				
			05/30				
Surprise Lake	21C13	4250	05/15		46.1	59.6	
			05/30		24.3	47.7	32.3

SNOTEL READINGS, JUNE 1, 1985

SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR		PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (Inches)
NAME	Number	Elevation				Last Year Average

COWLITZ RIVER

Pigtail Peak	21C33	5900	05/15	52.7	54.5	
			05/30	38.7	51.3	36.6
Potato Hill	21C14	4500	05/15	18.5	16.4	
			05/30	0.0	4.8	4.8
Sheep Canyon	22C10	4050	05/15	45.9	44.7	
			05/30		36.9	36.9
Strawberry Landing	22C08	3280	05/15	50.9		
			05/30	28.9		
Steppes PC	22C11		05/15			
			05/30	0.0		
Spirit PC	22C12		05/15	0.0		
			05/30	0.0	0.0	

NISQUALLY RIVER

Paradise Park	21C35	5500	05/15	73.9	22.1	
			05/30	63.9	20.8	23.8

WHITE RIVER

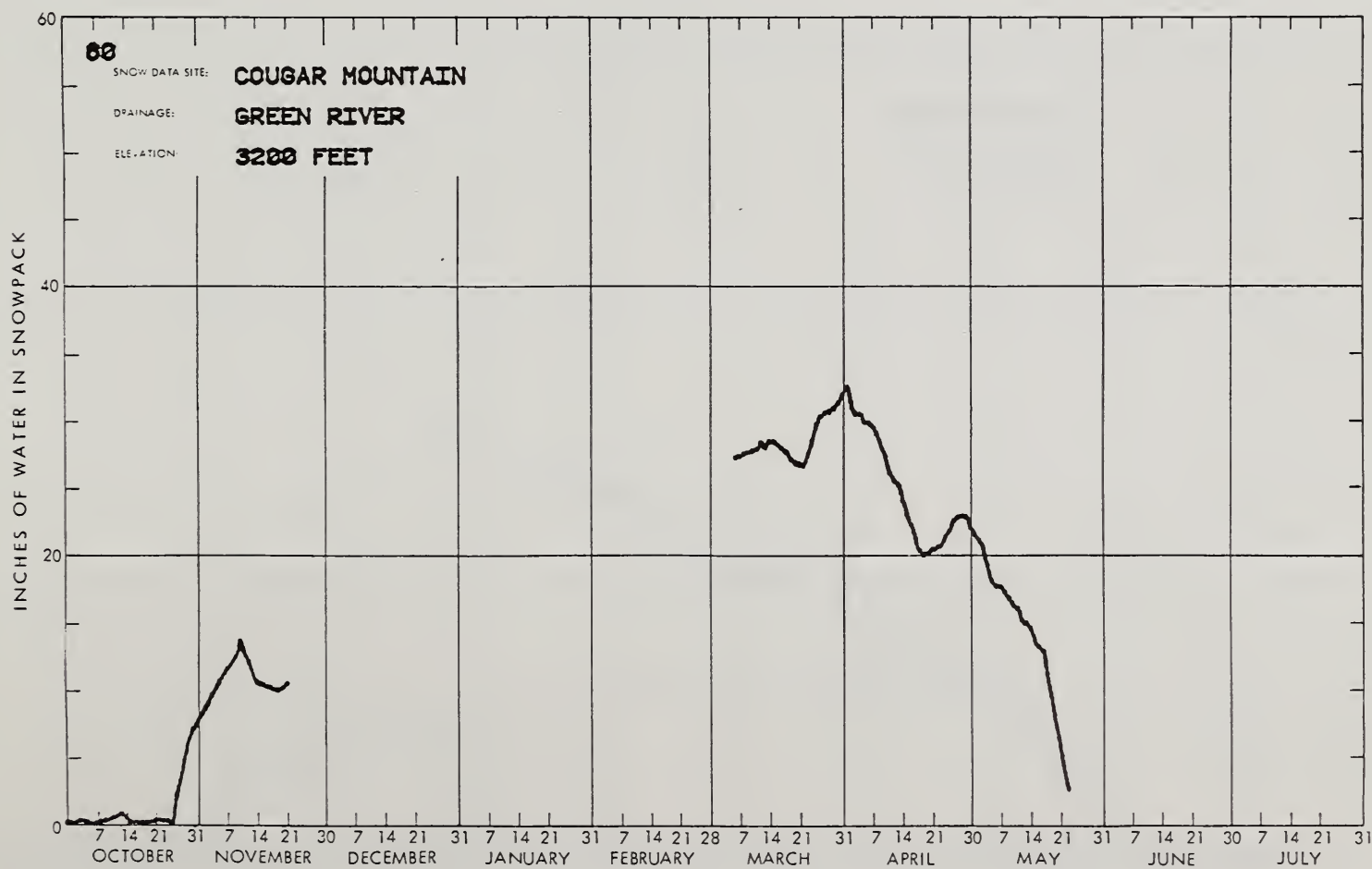
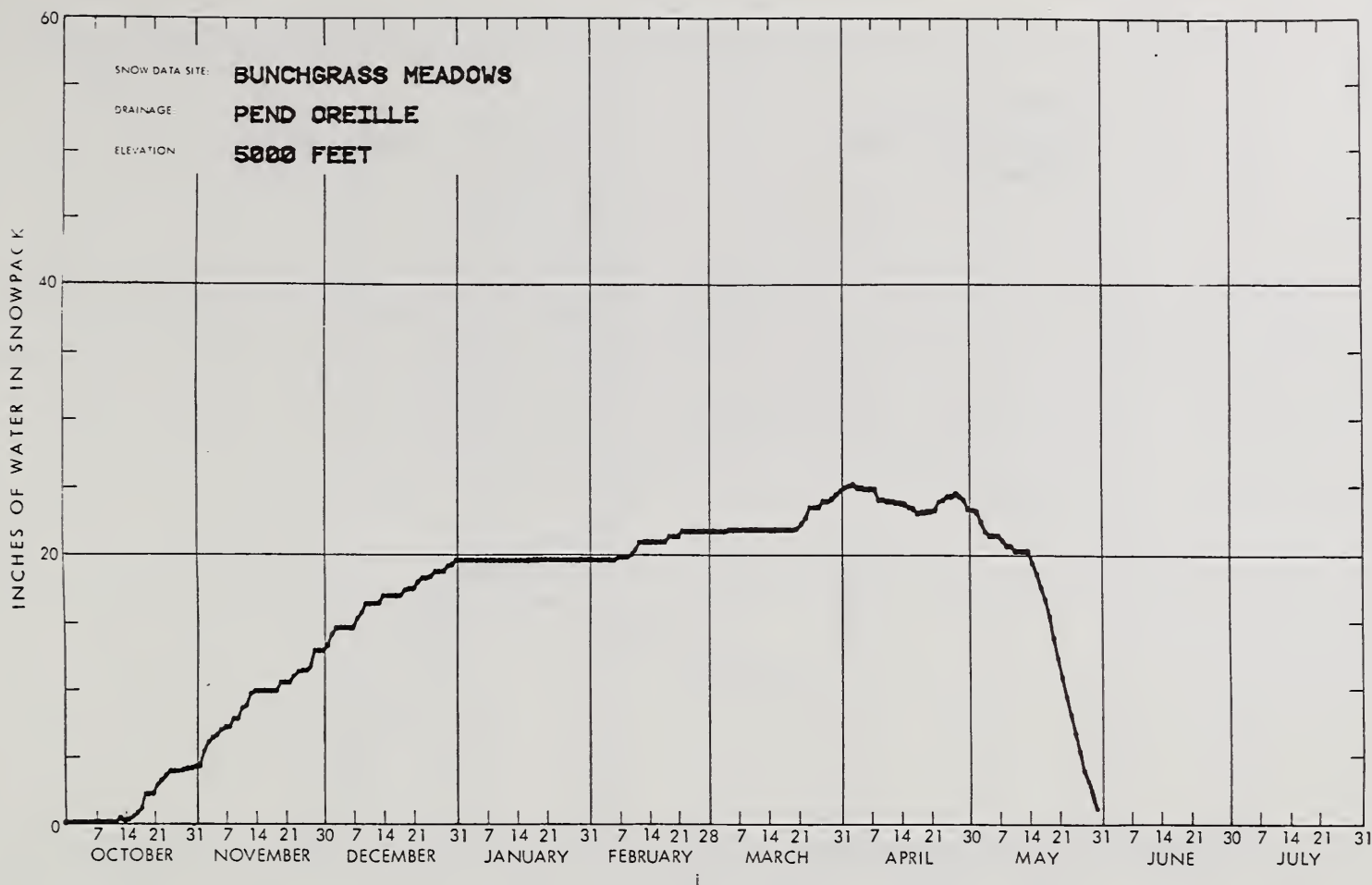
Corral Pass	21B13	6000	05/15			
			05/30			11.1
Morse Lake	21C17	5400	05/15	42.1	23.2	
			05/30	24.0	46.7	53.5

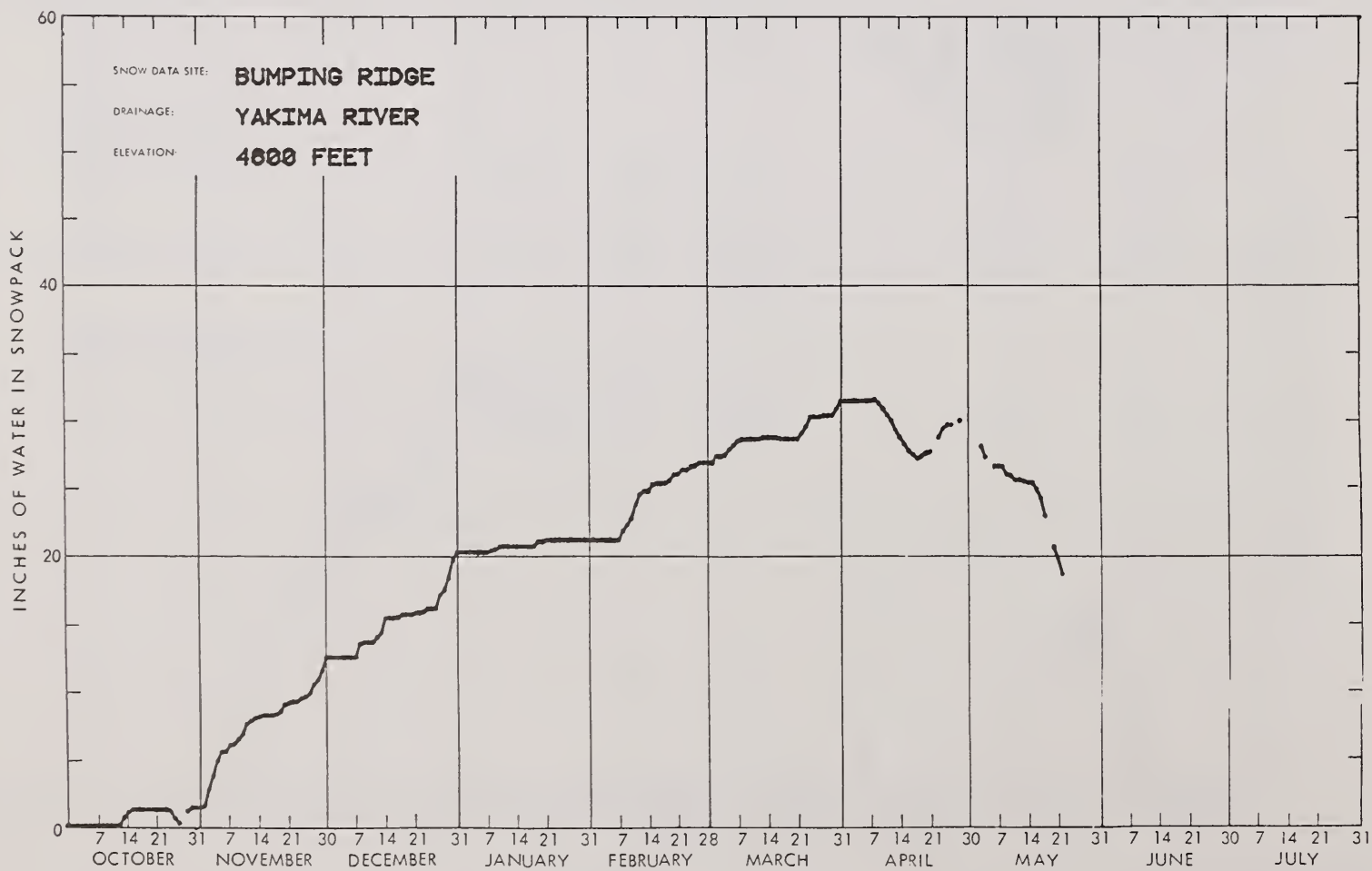
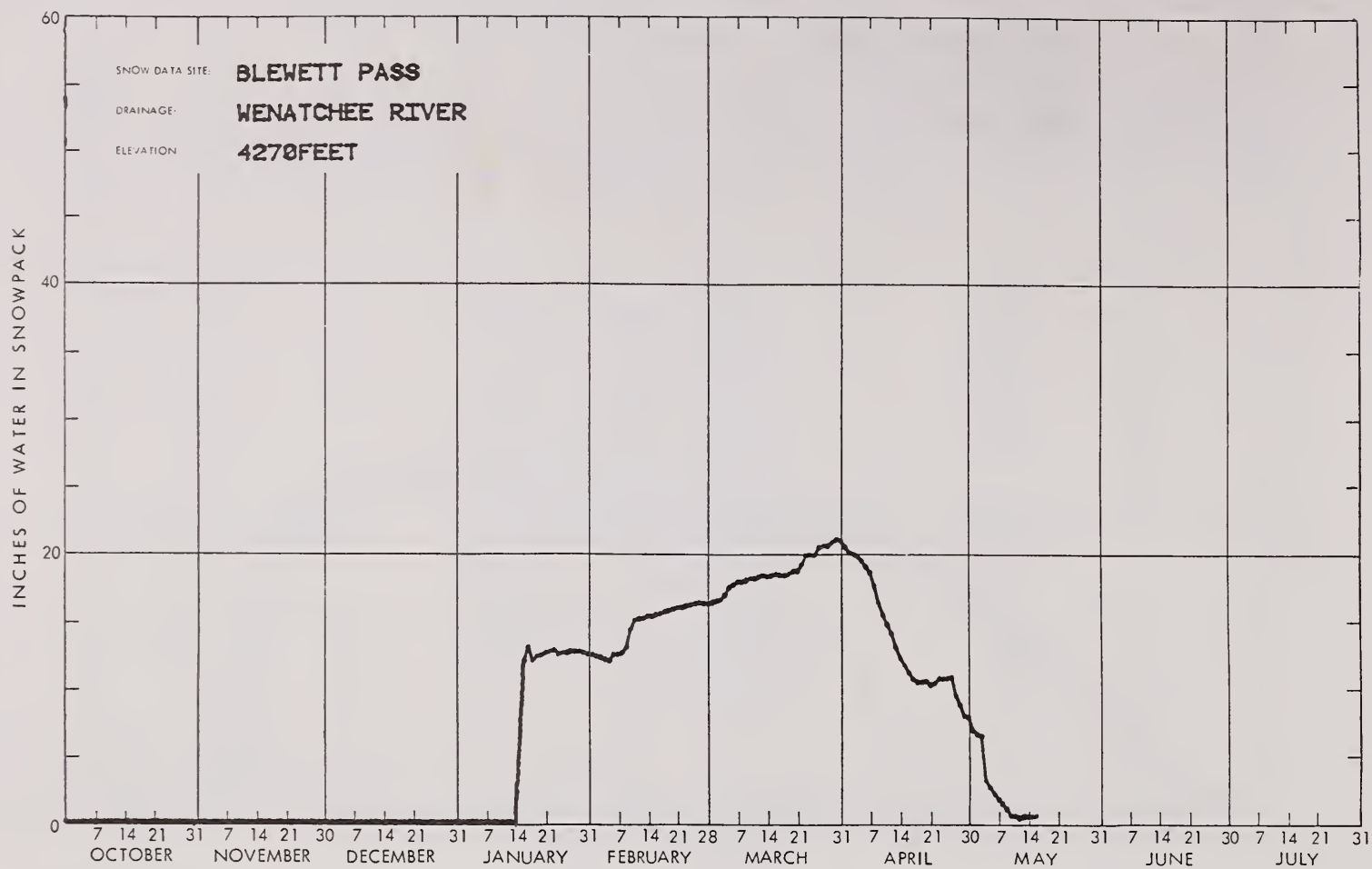
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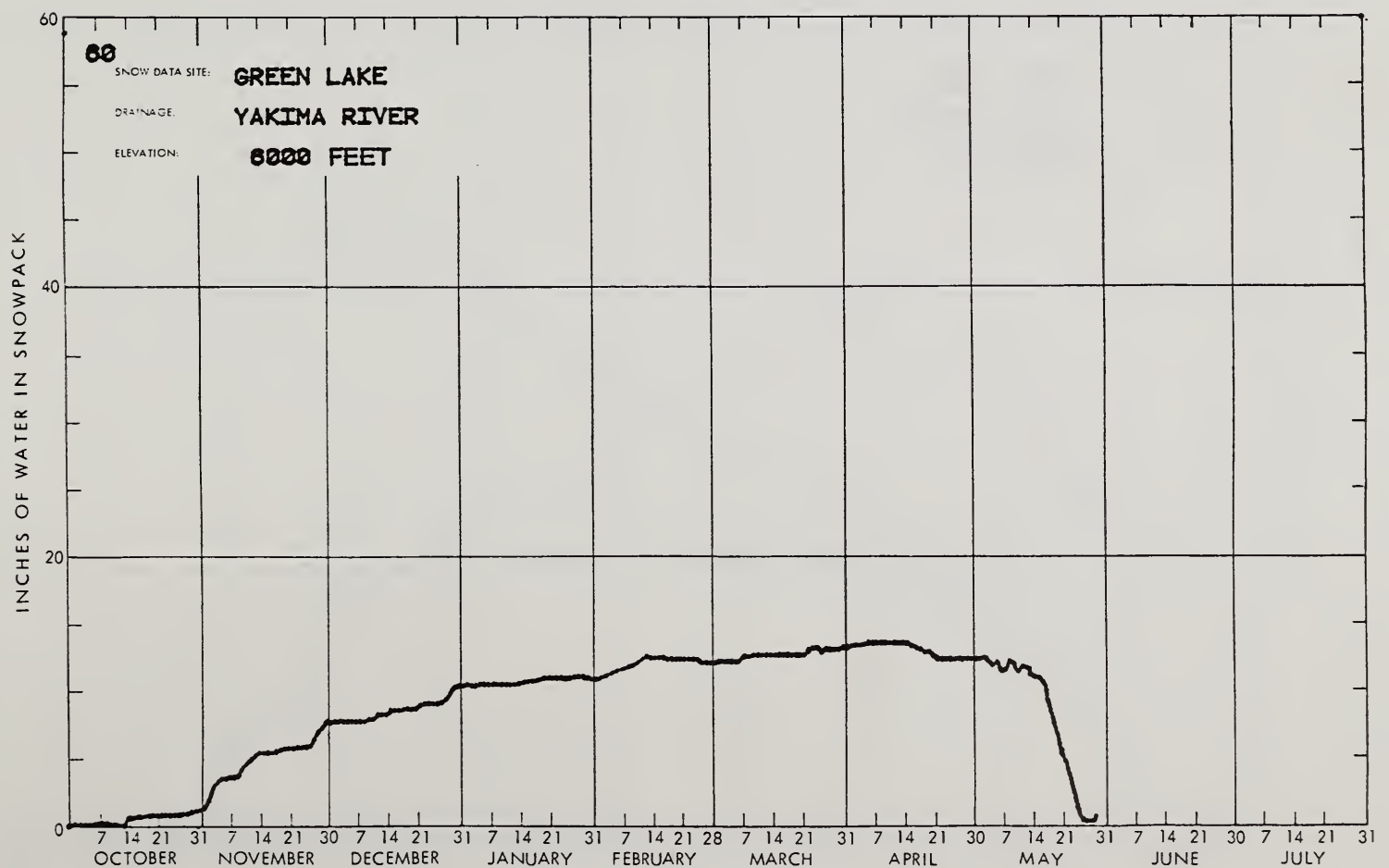
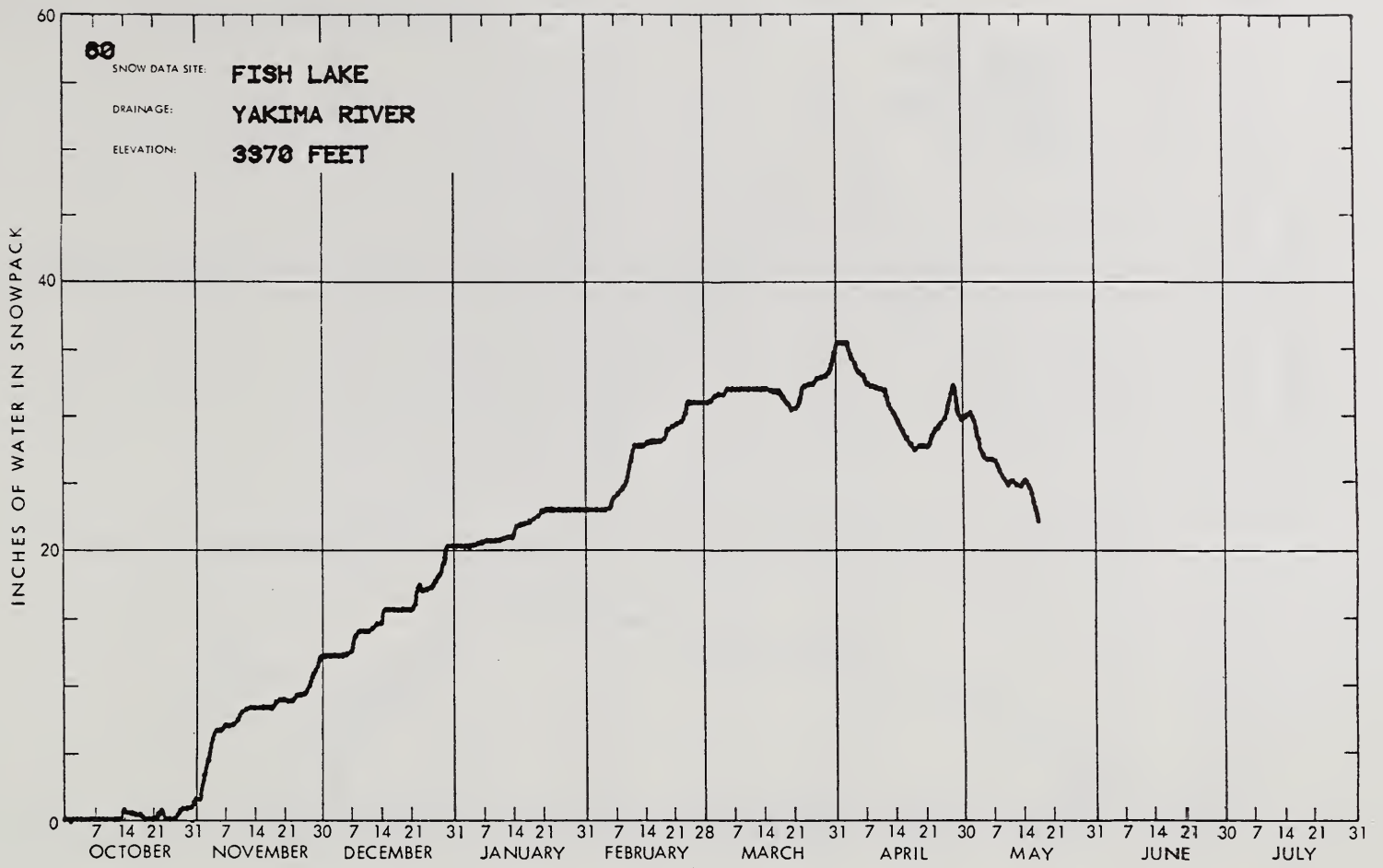
Cougar Mountain	21B42	3200	05/15	12.8	13.0	
			05/30	0.0	3.0	1.1
Stampede Pass	21B10	3960	05/15	45.4	43.9	
			05/30	21.5	36.0	23.7

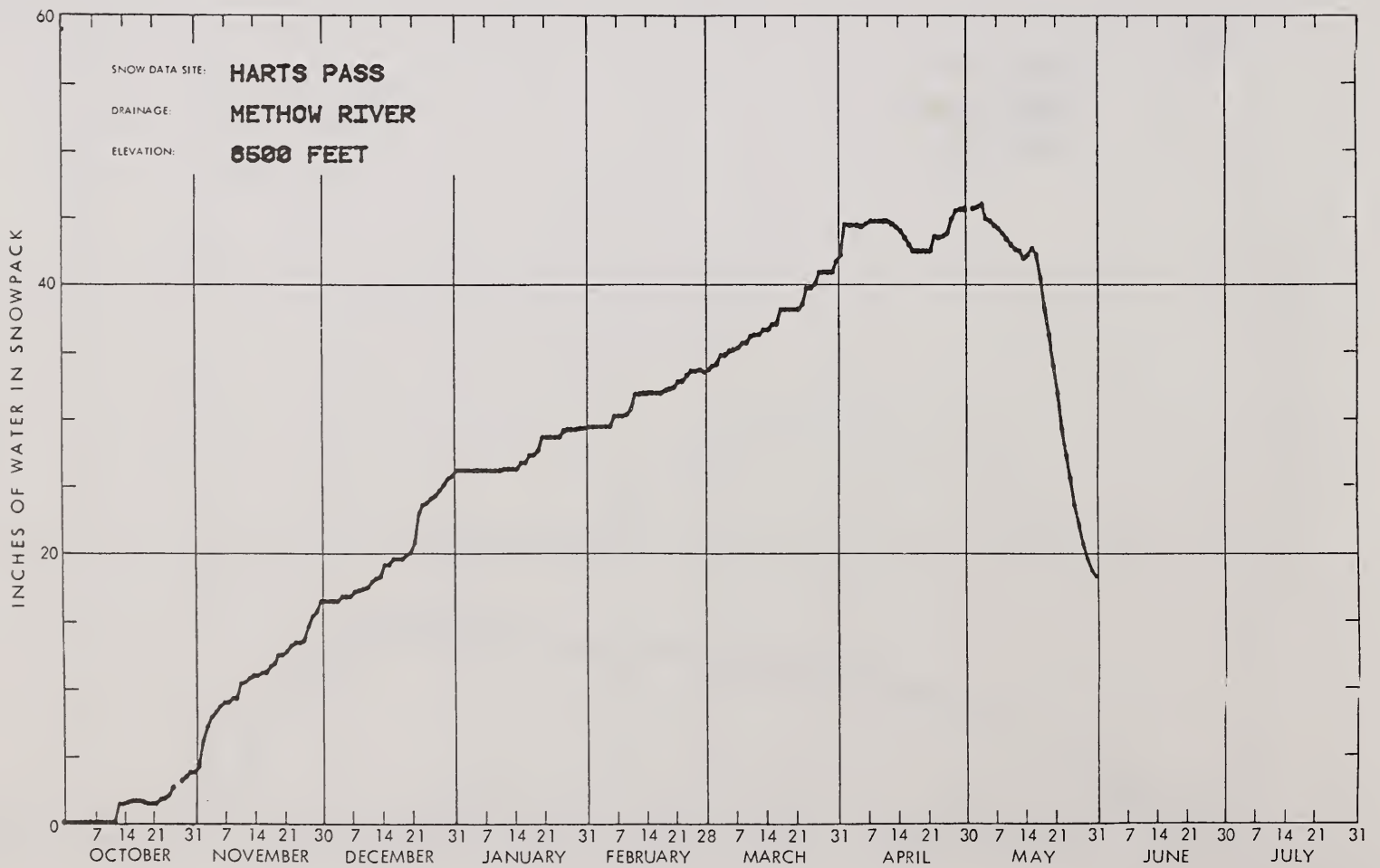
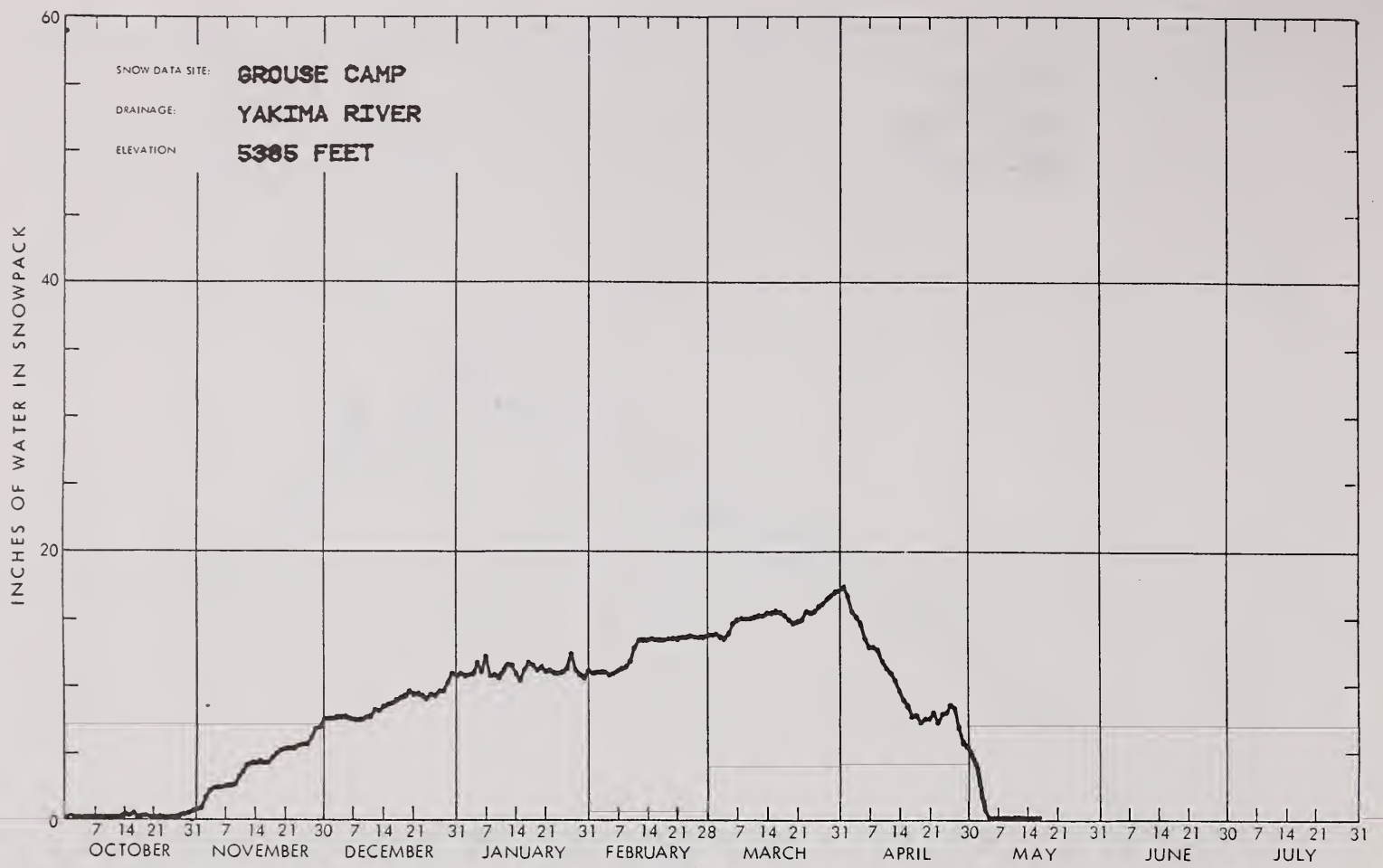
SNOQUALMIE RIVER

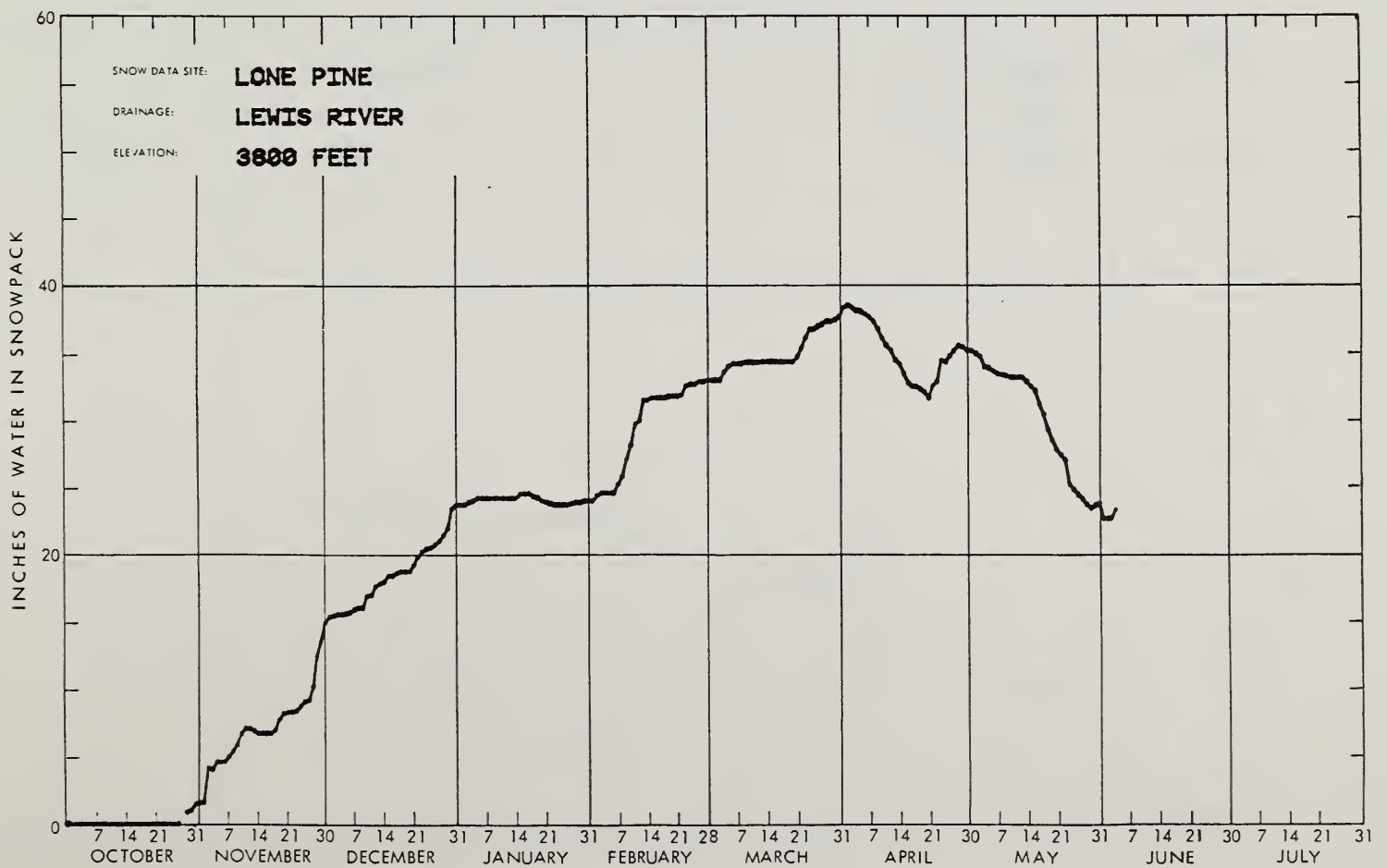
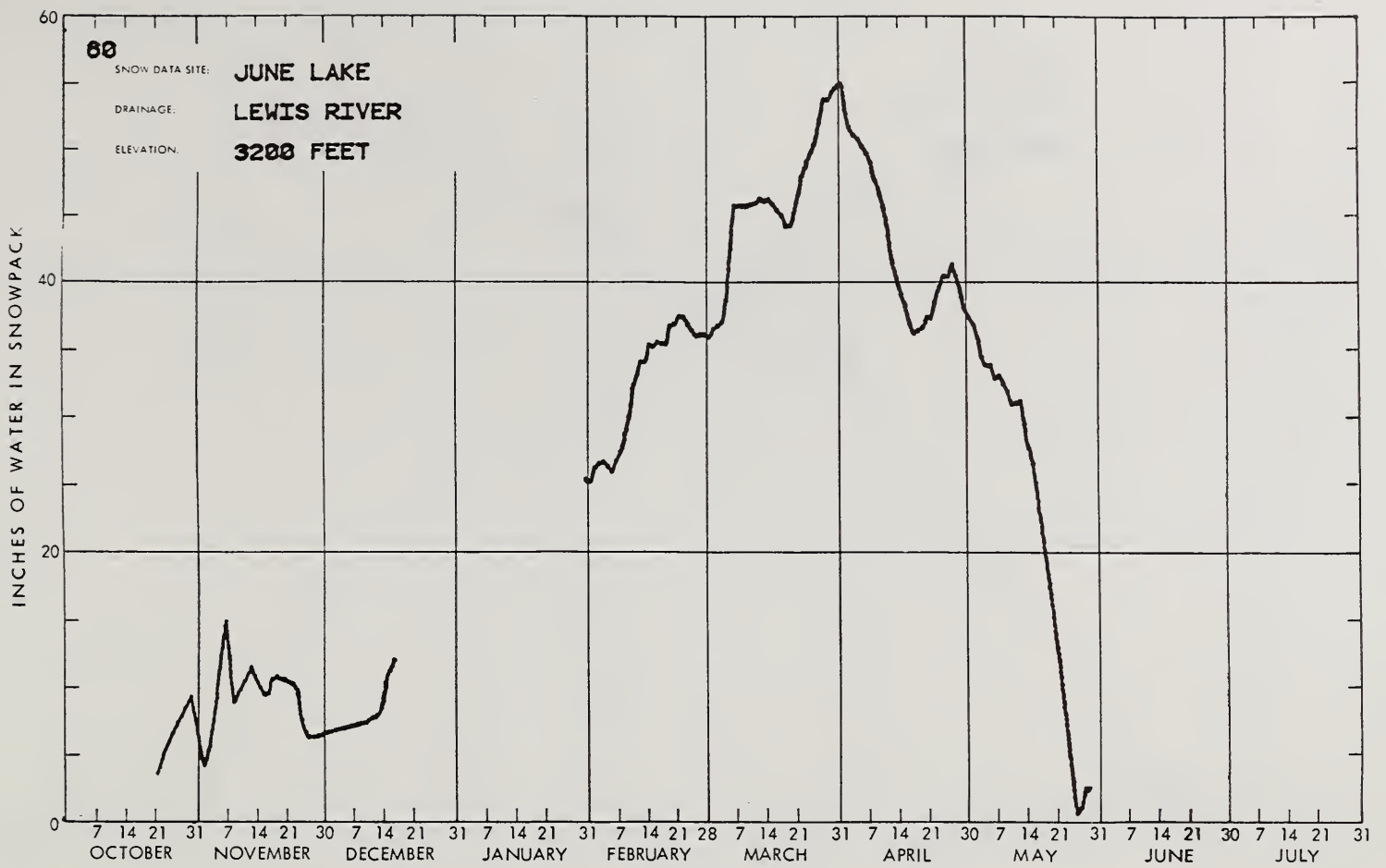
Olallie Meadows East	21B55	3960	05/15	67.4	56.5	
			05/30	50.7	45.2	37.8

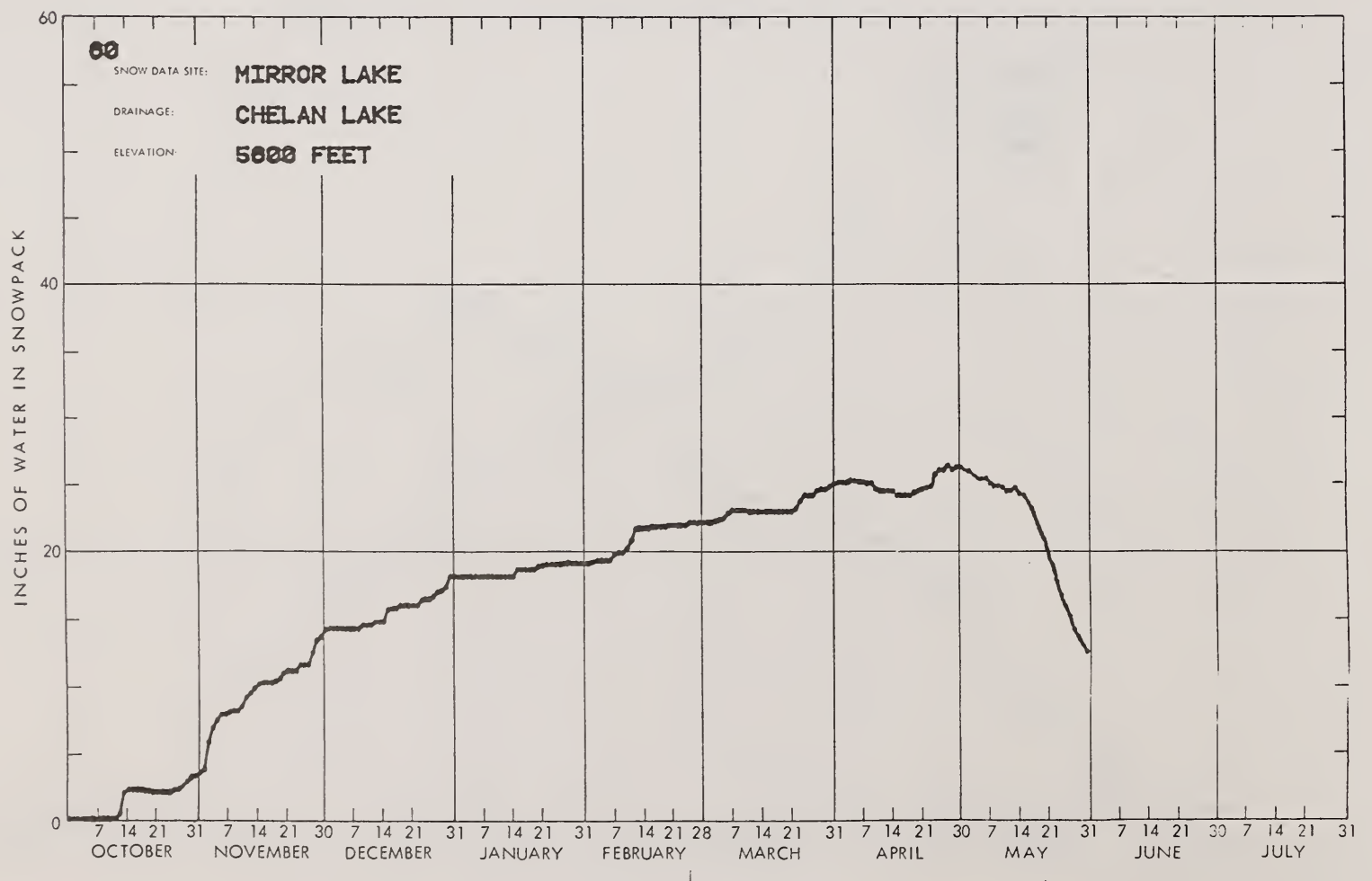
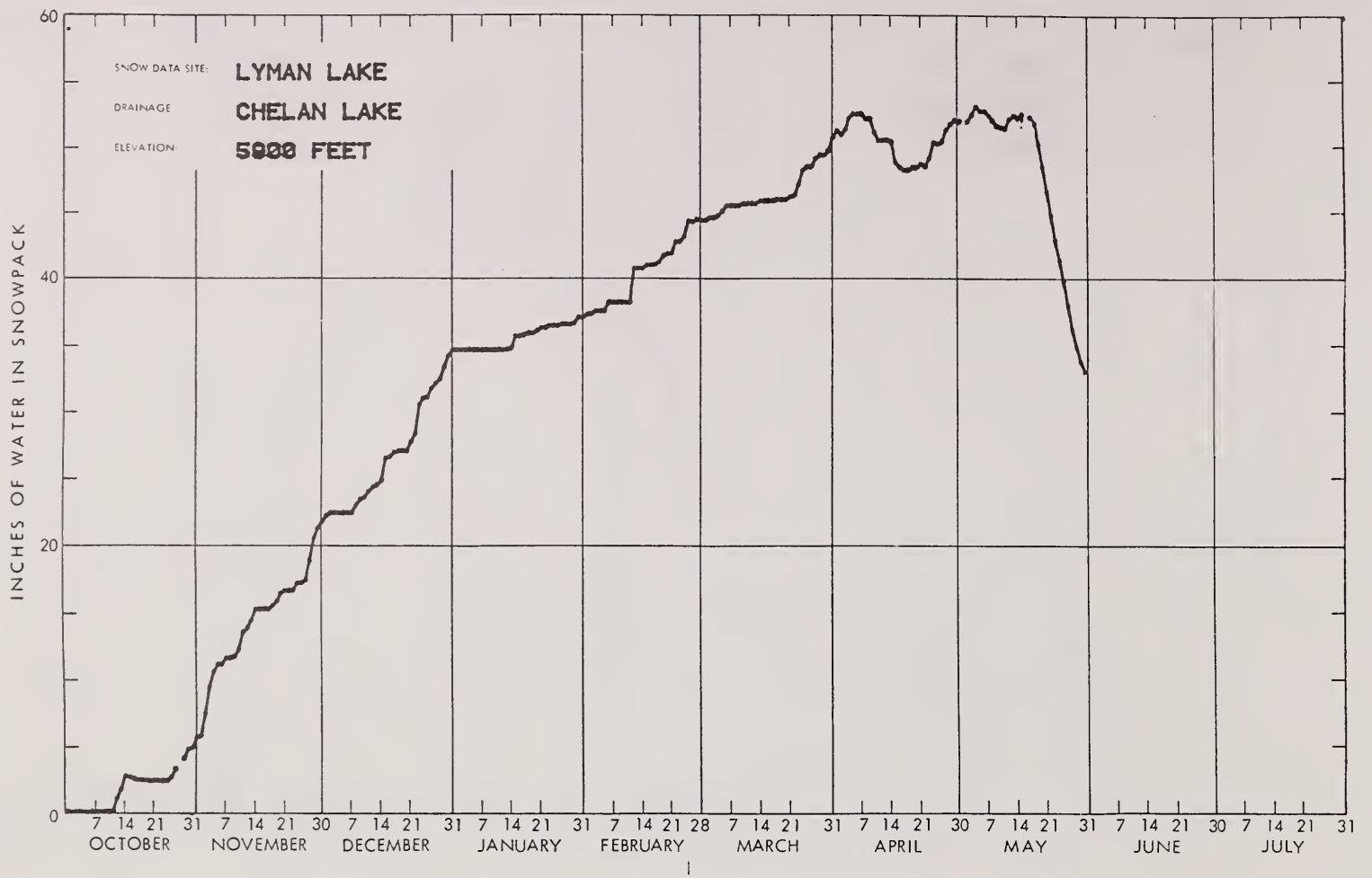


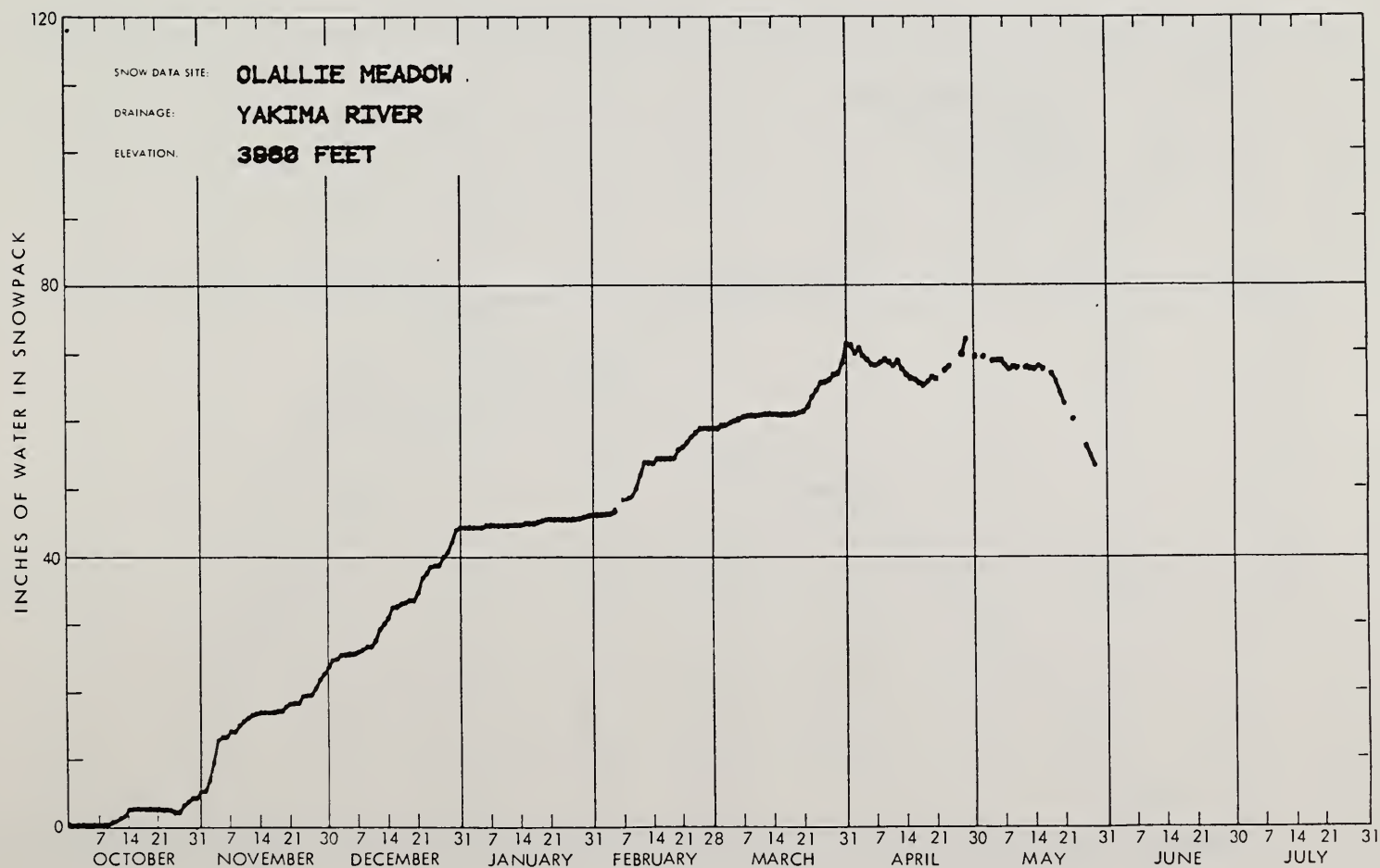
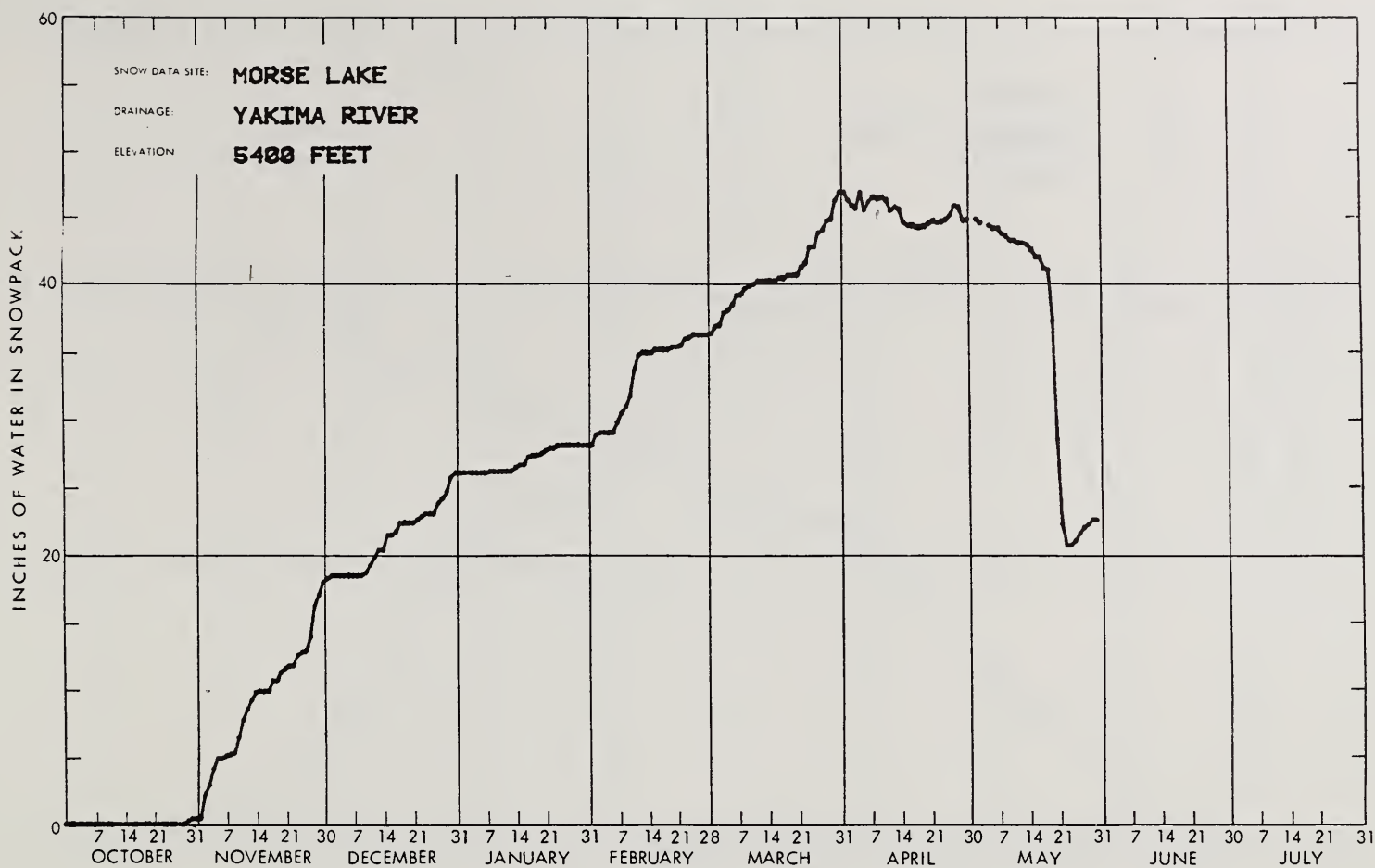


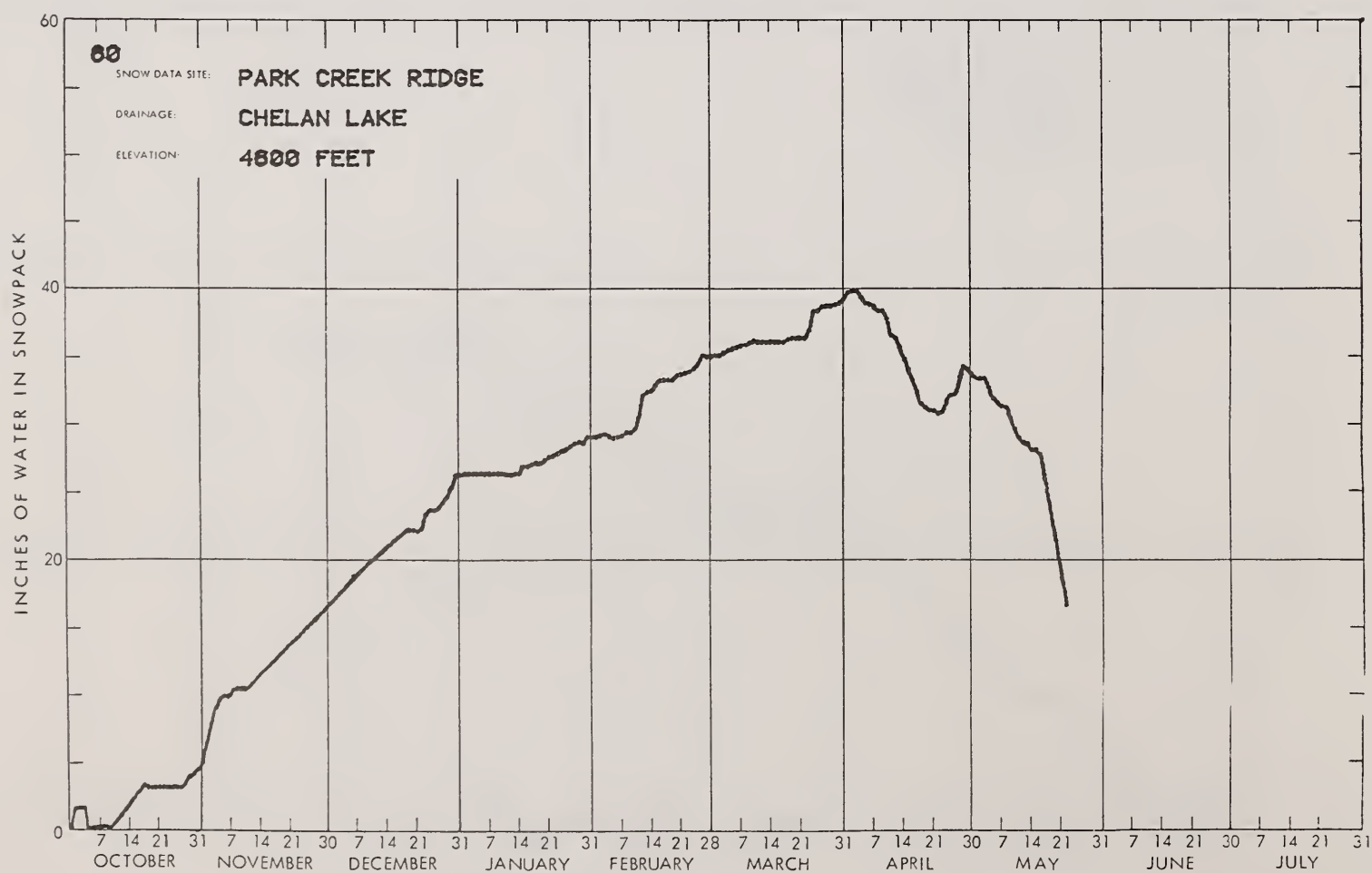
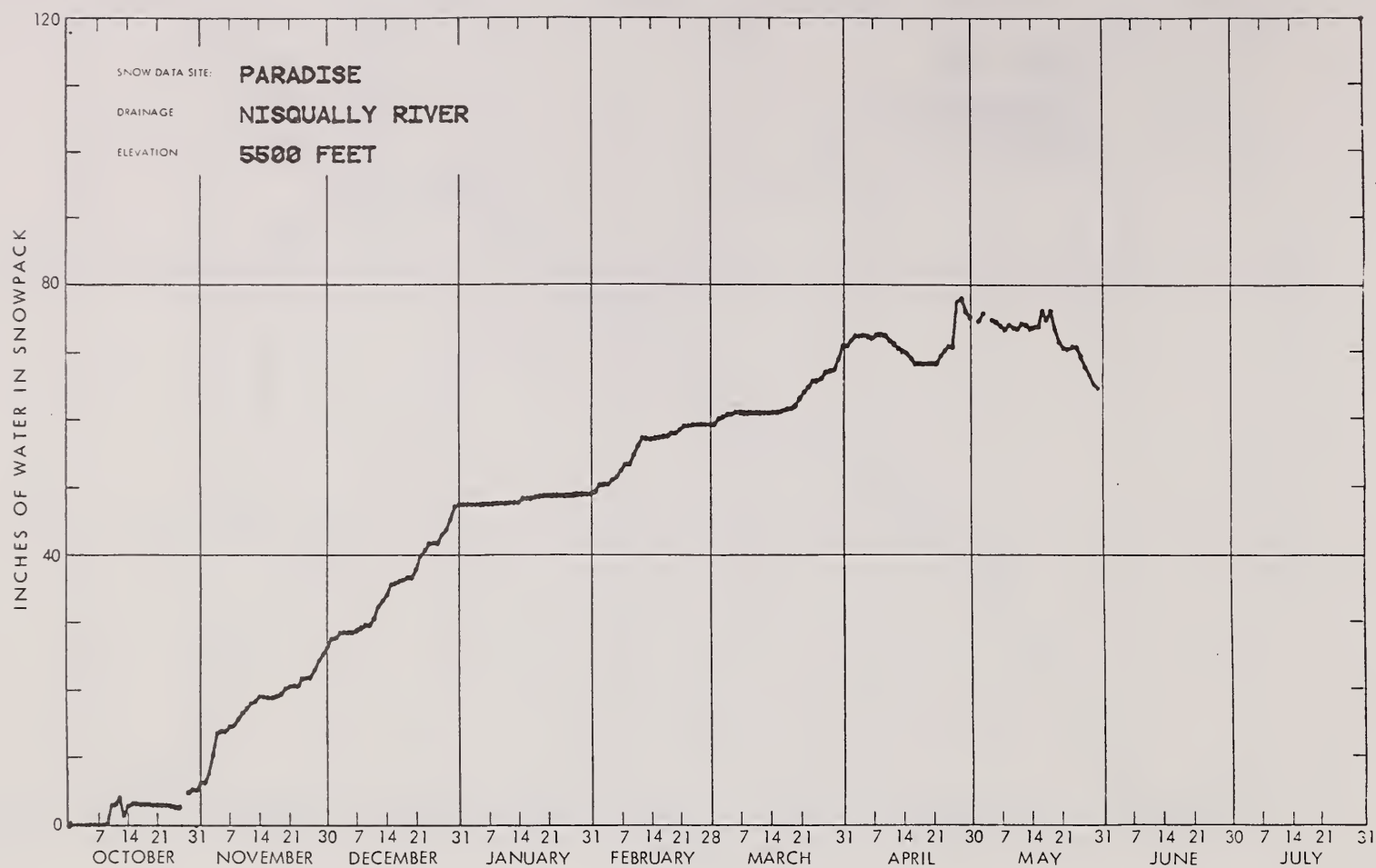


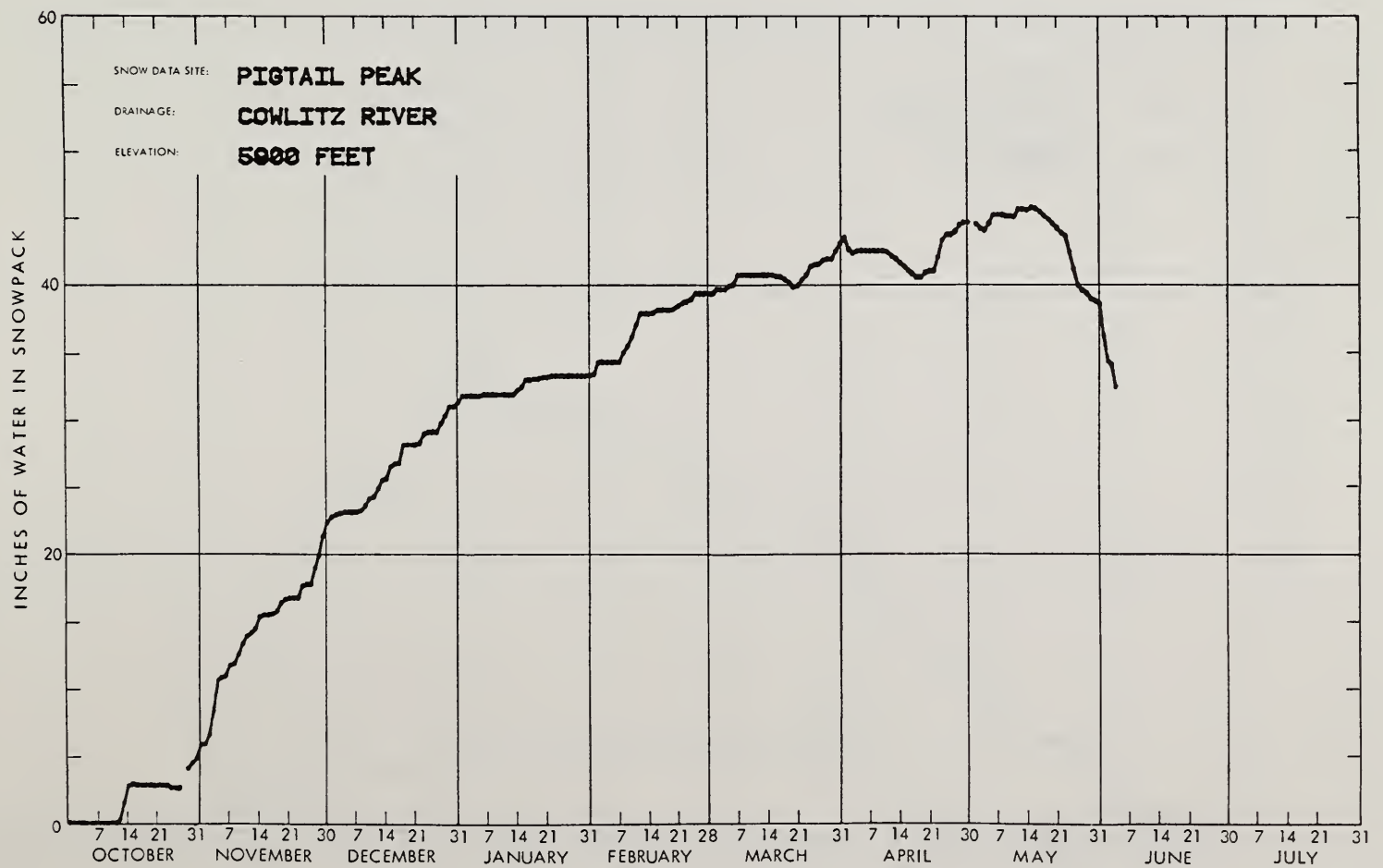
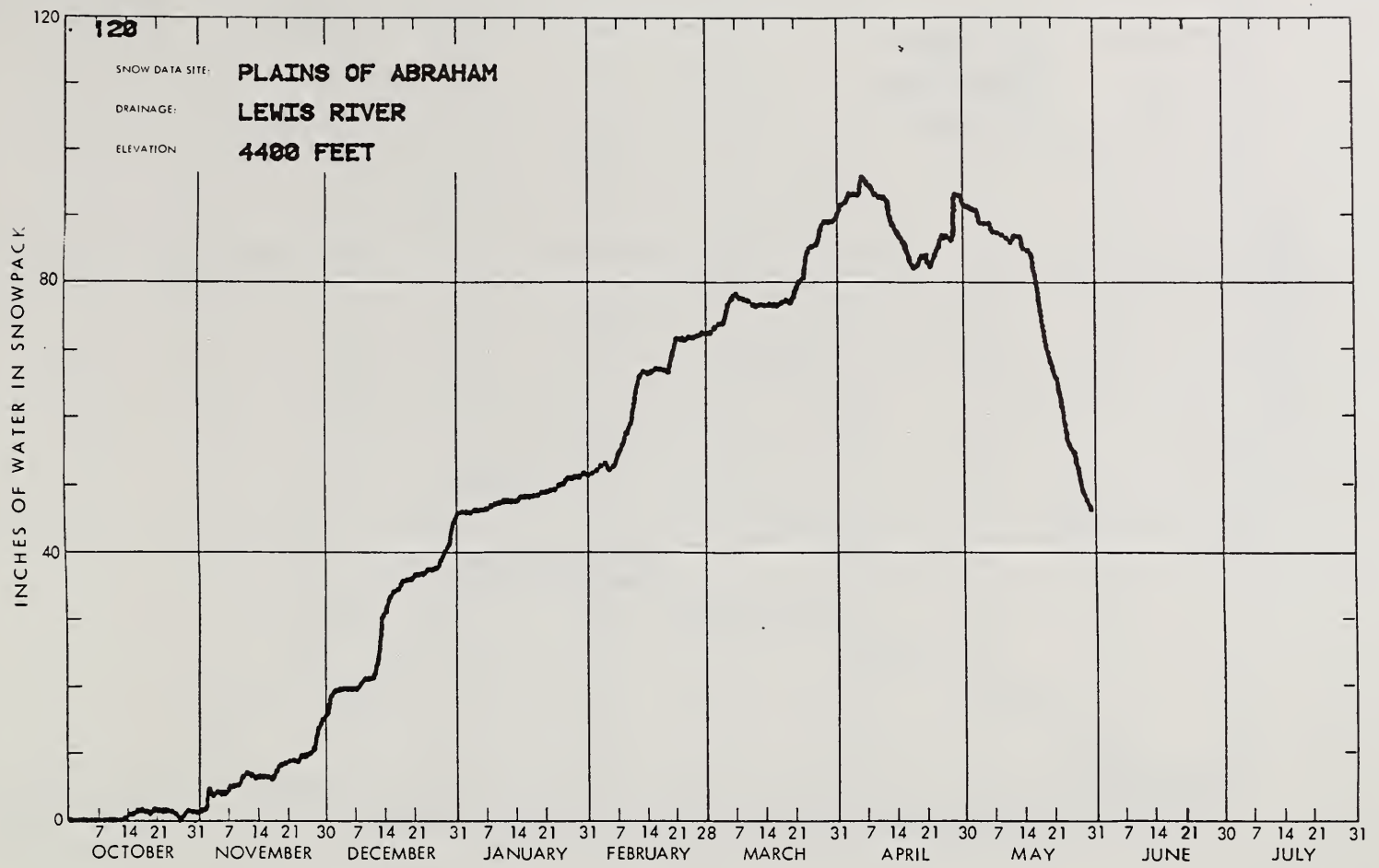


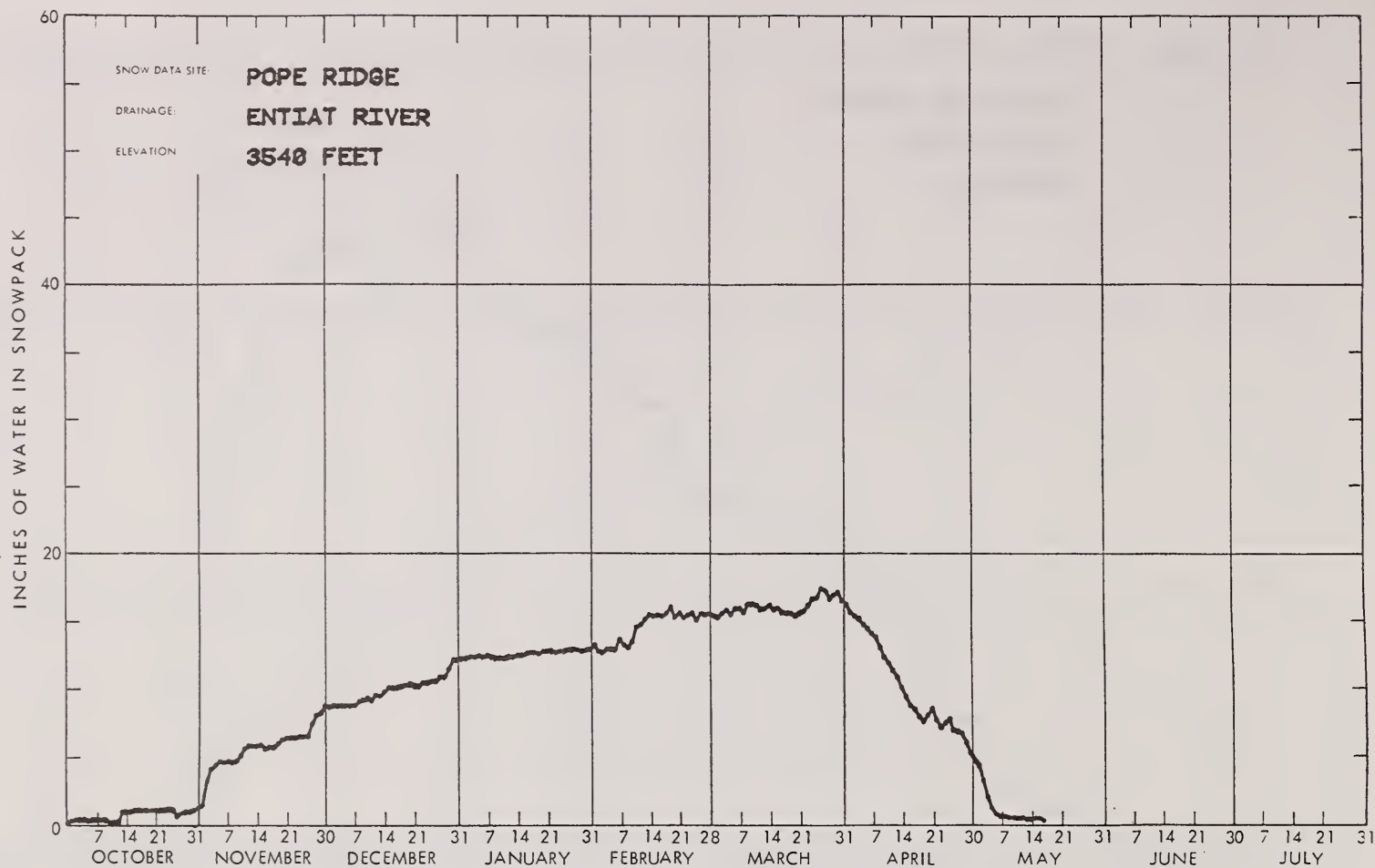




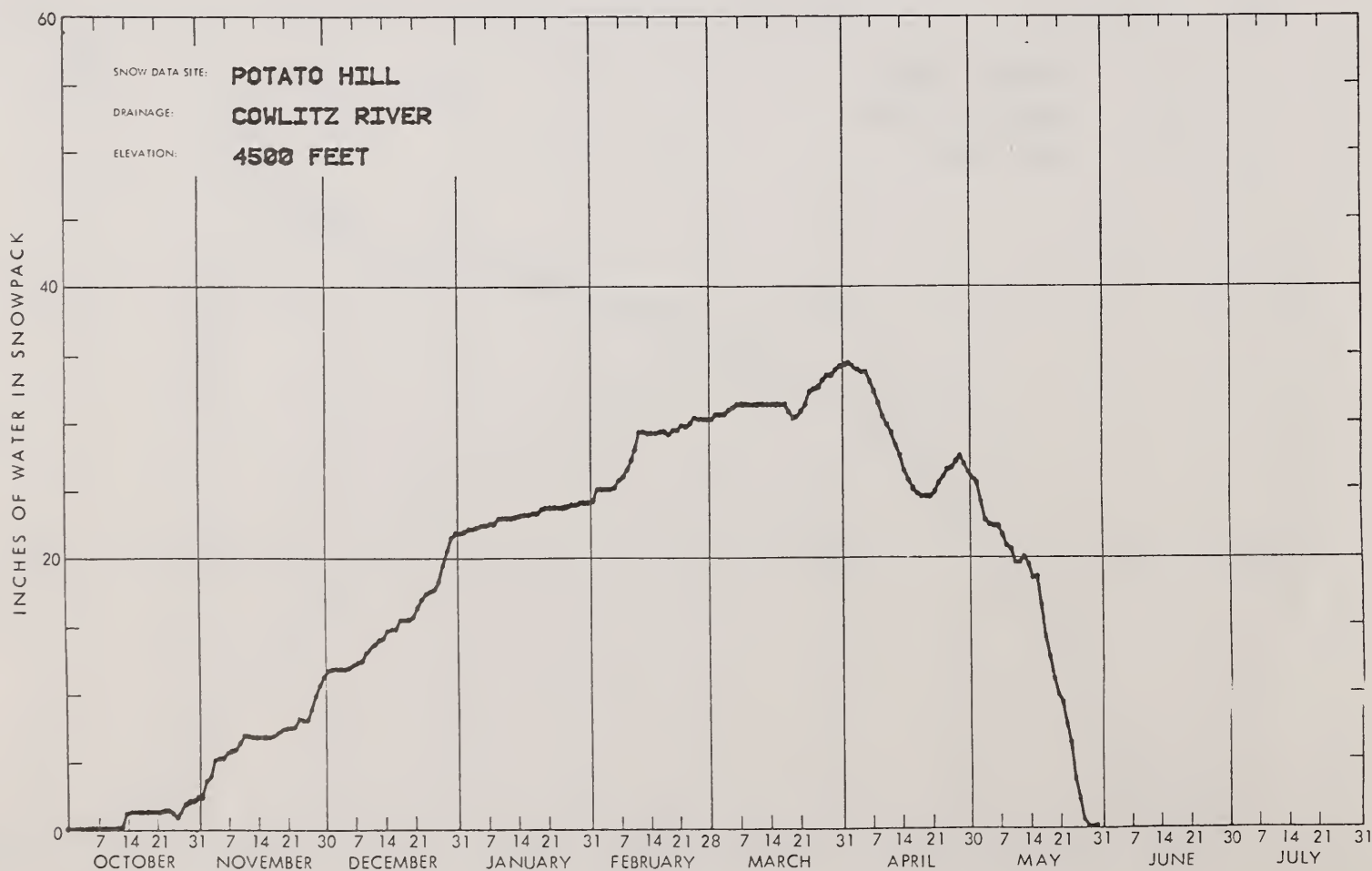


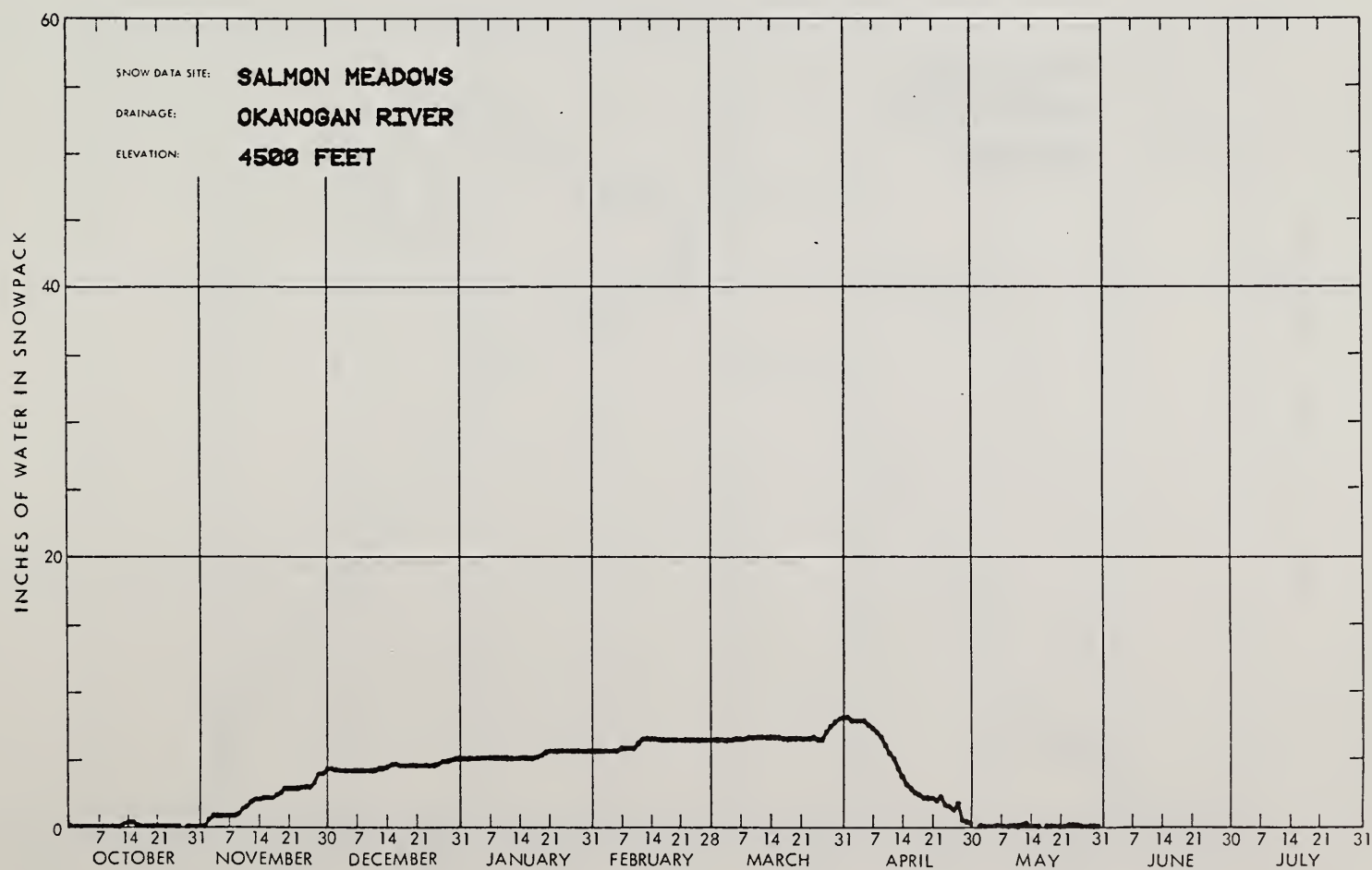
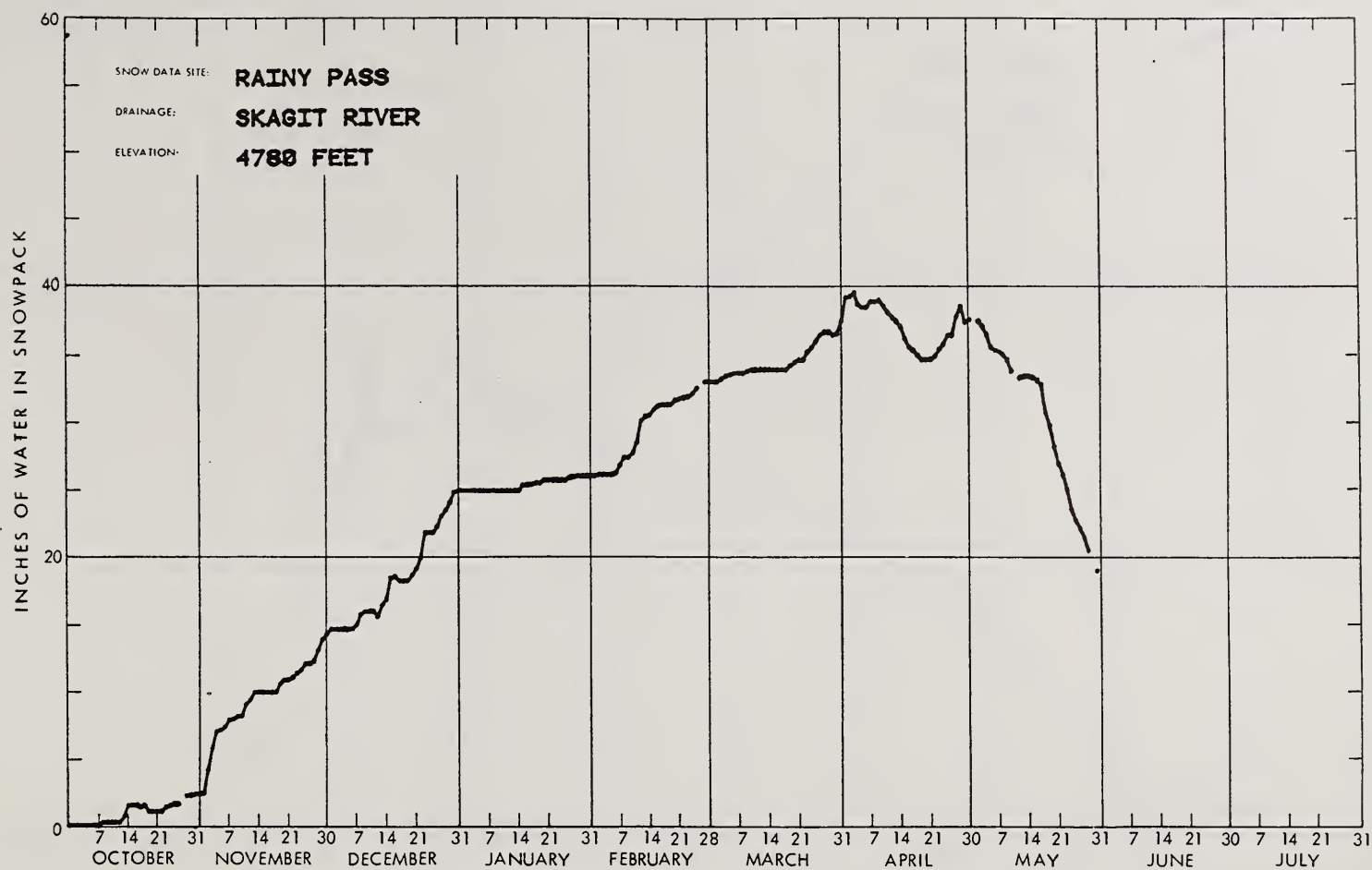


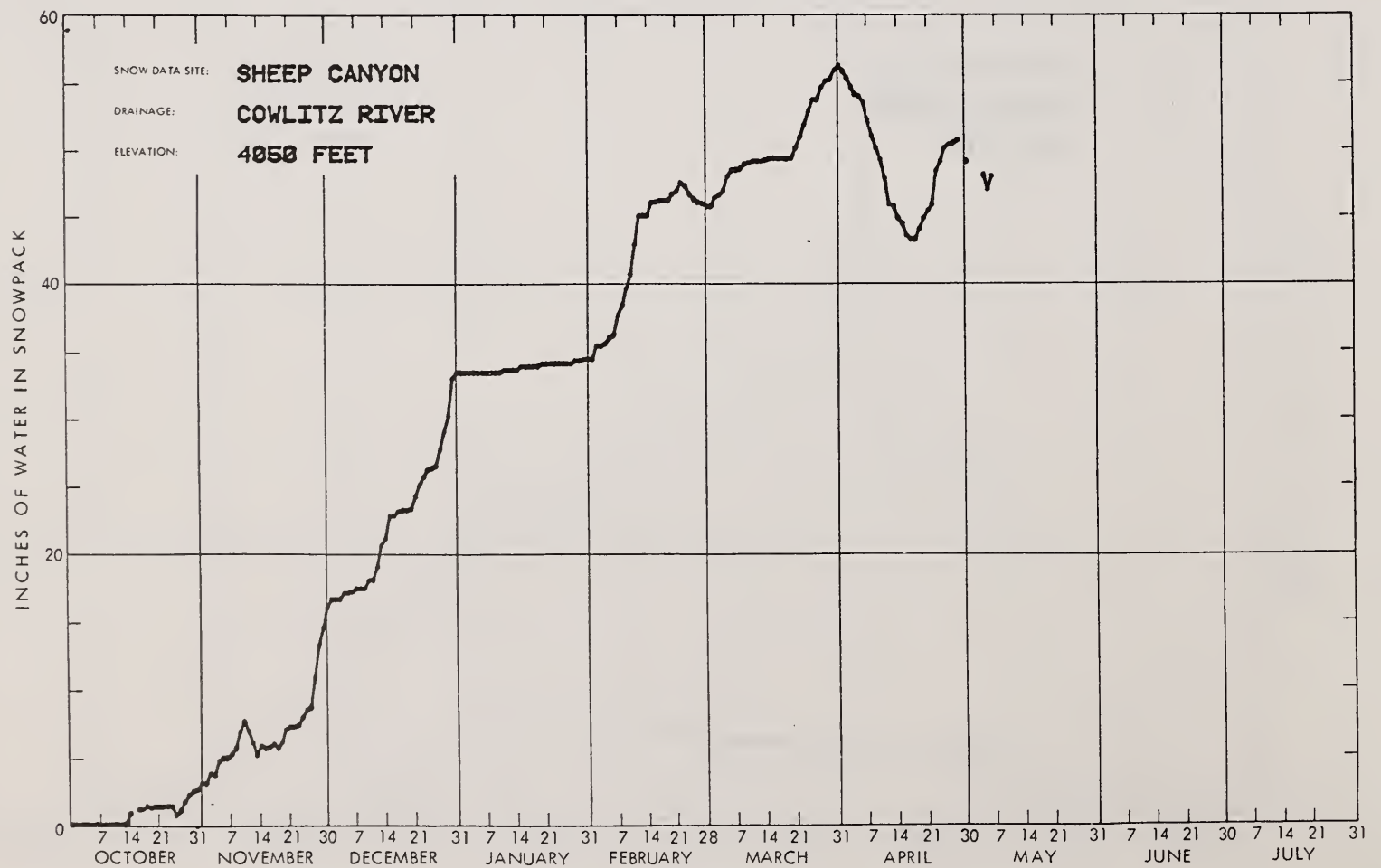
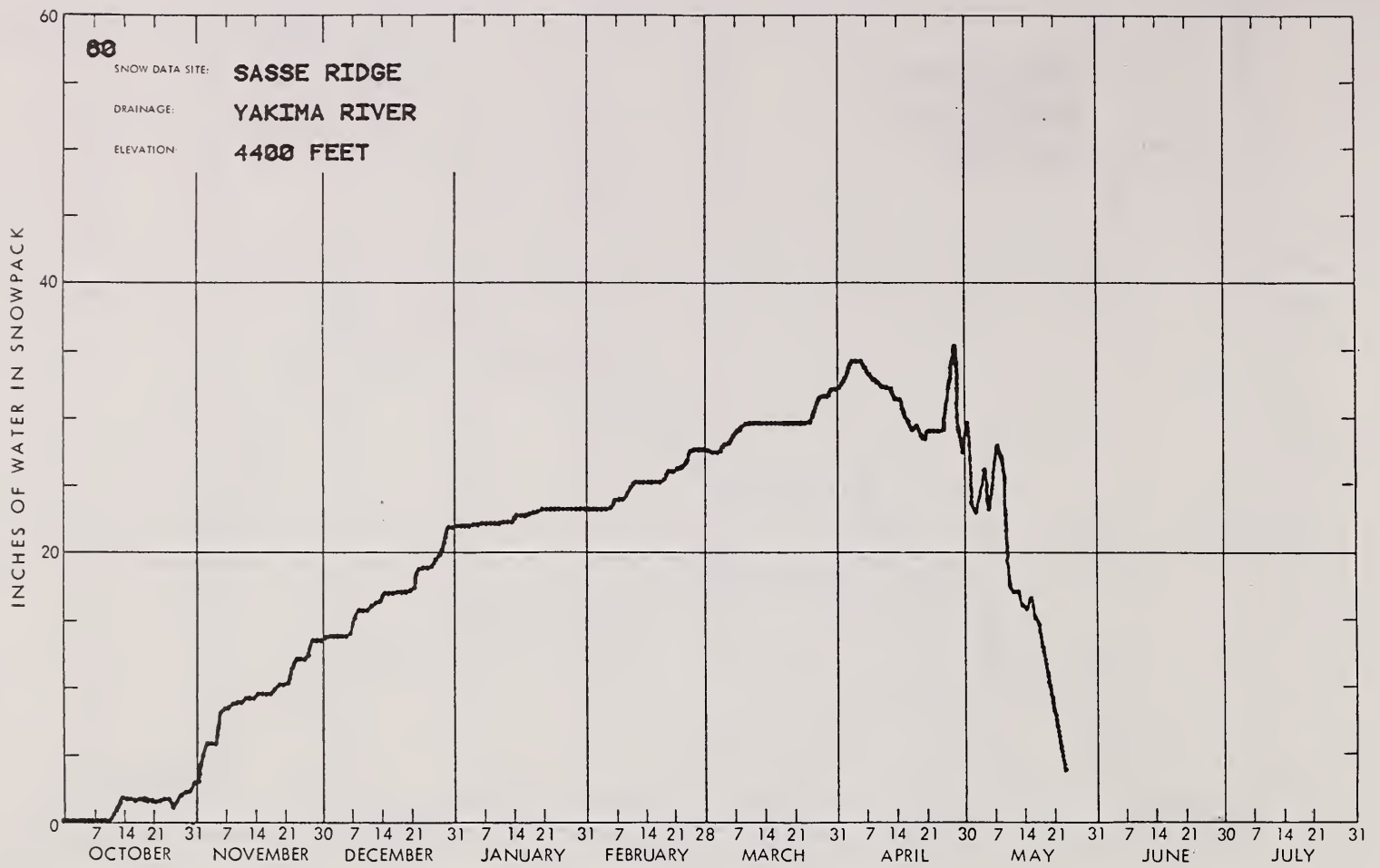


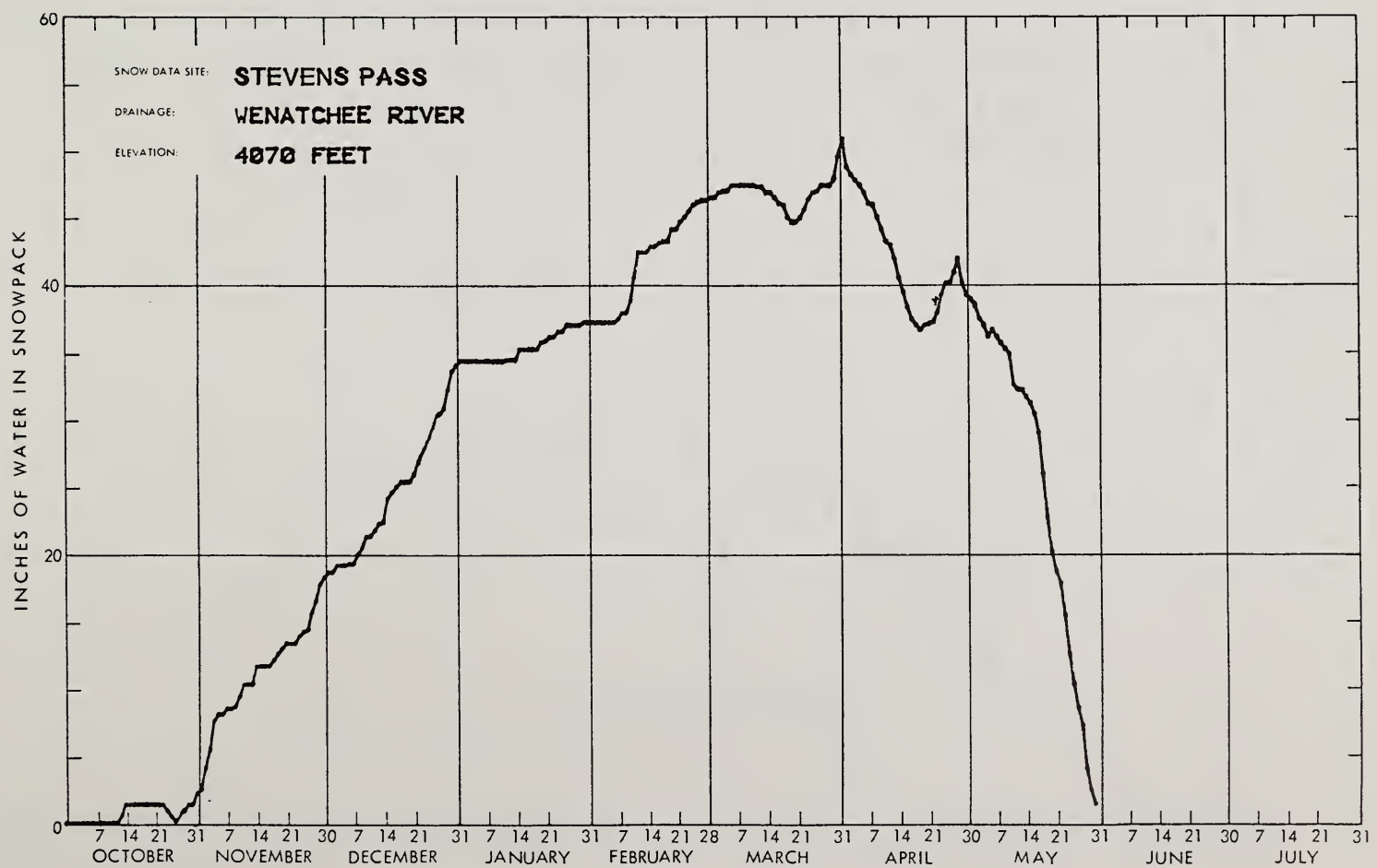
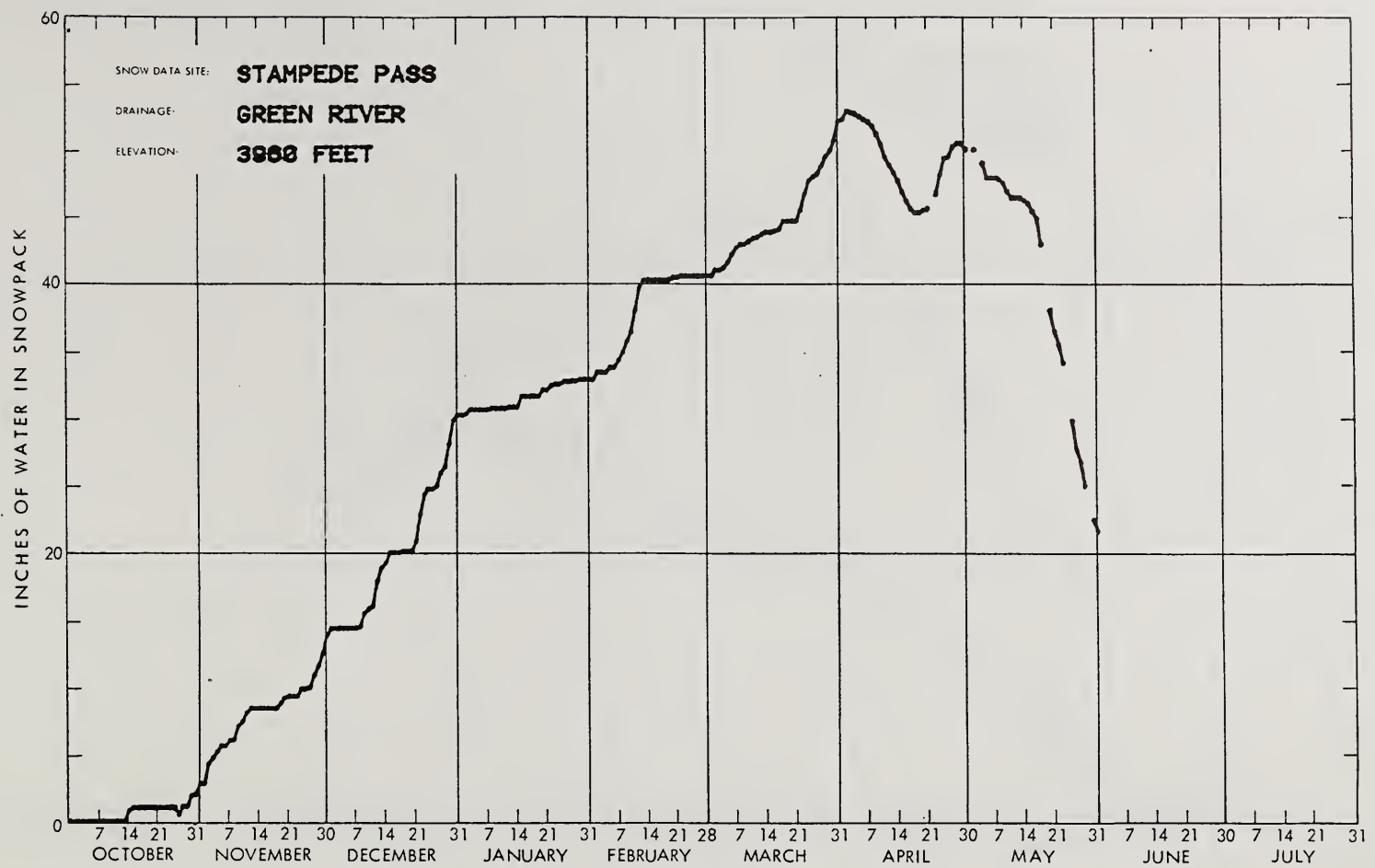


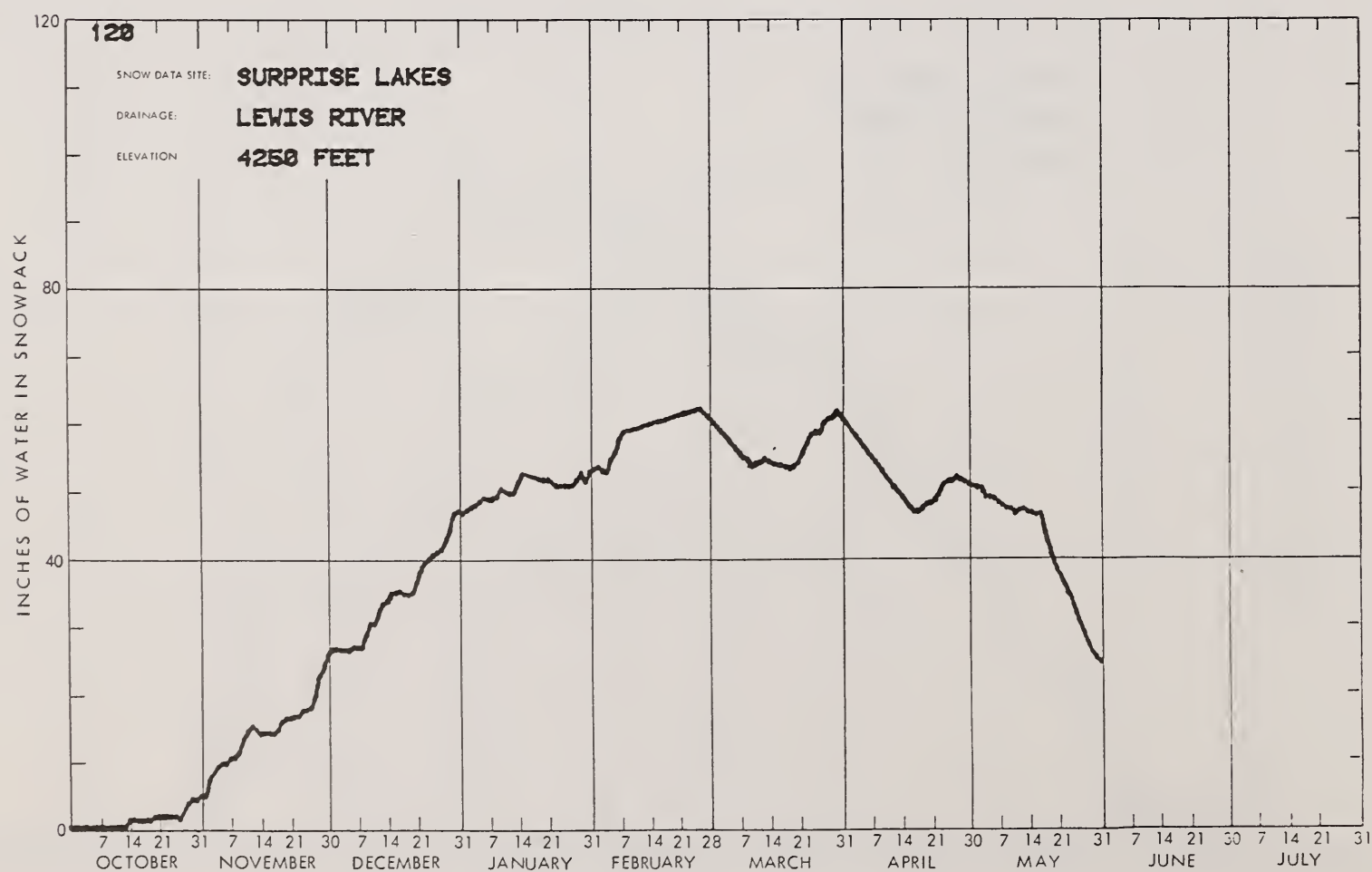
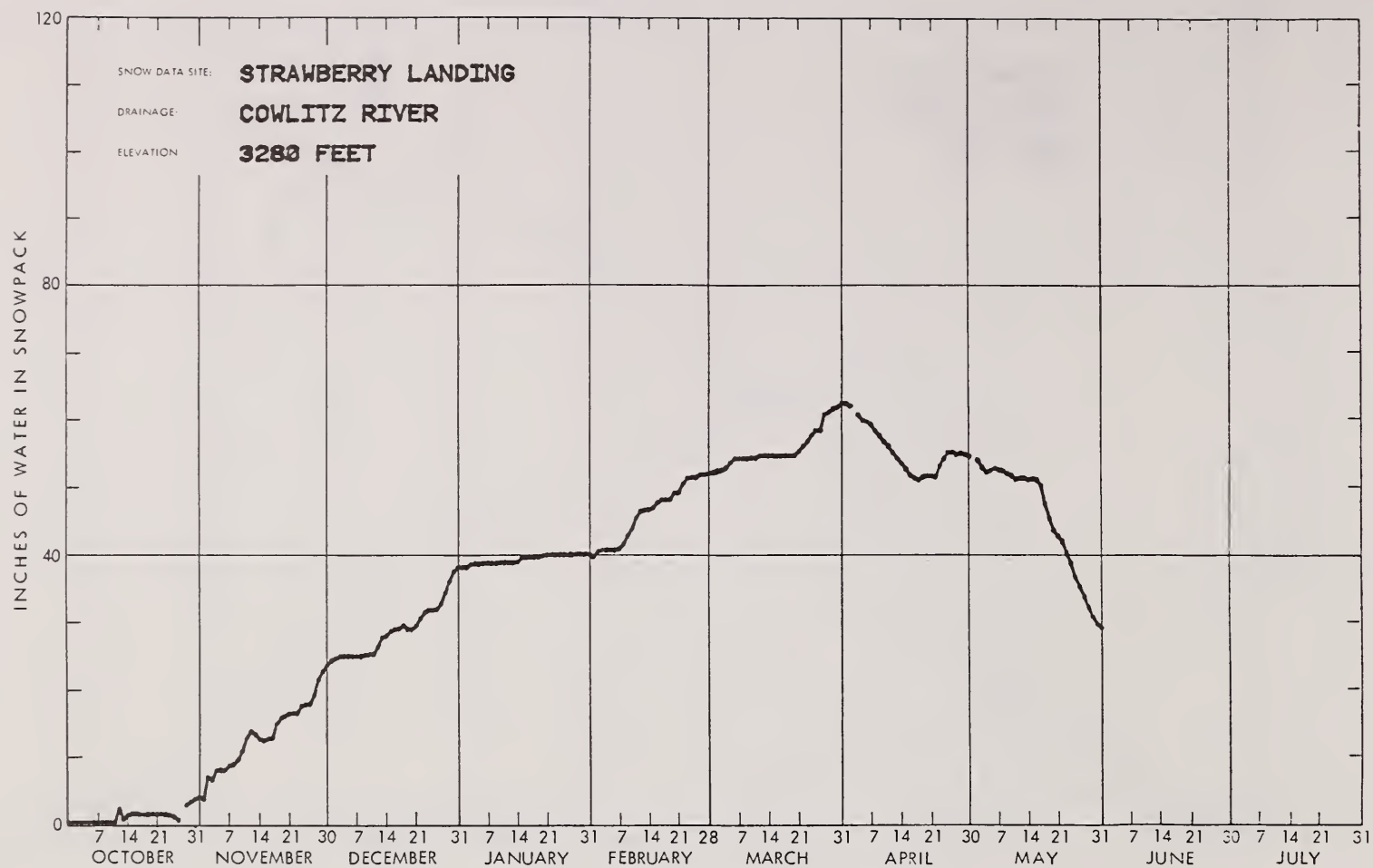
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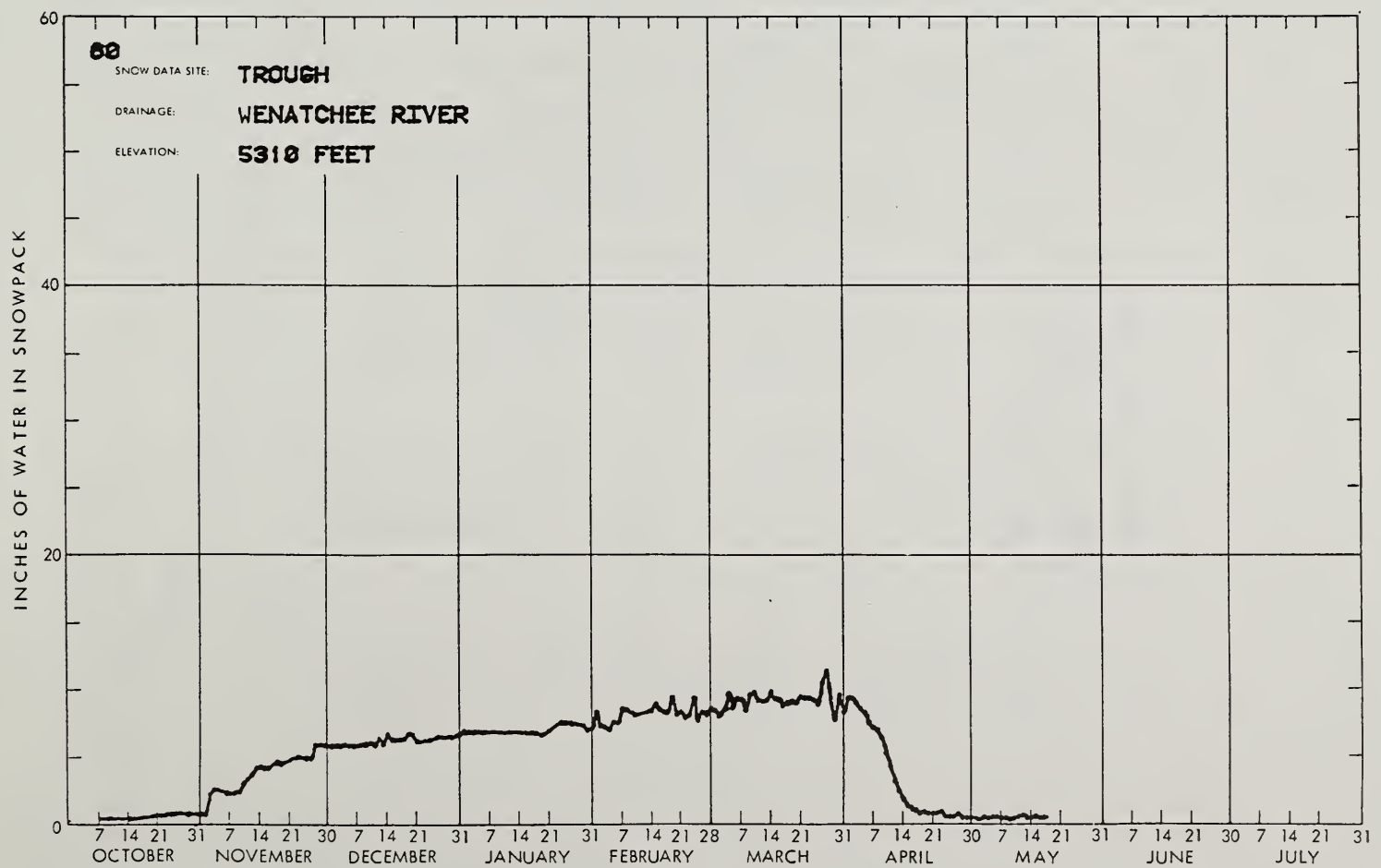
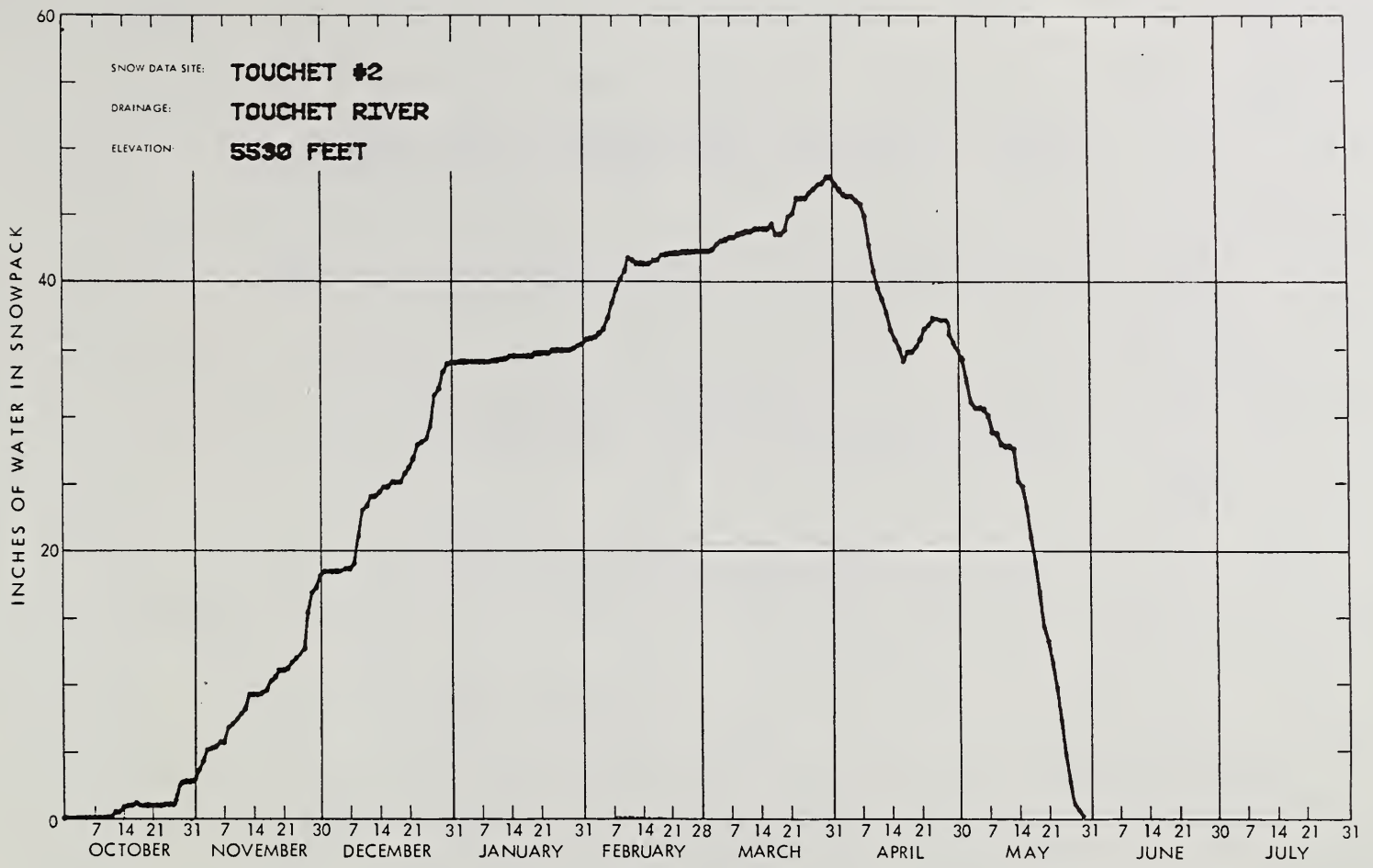


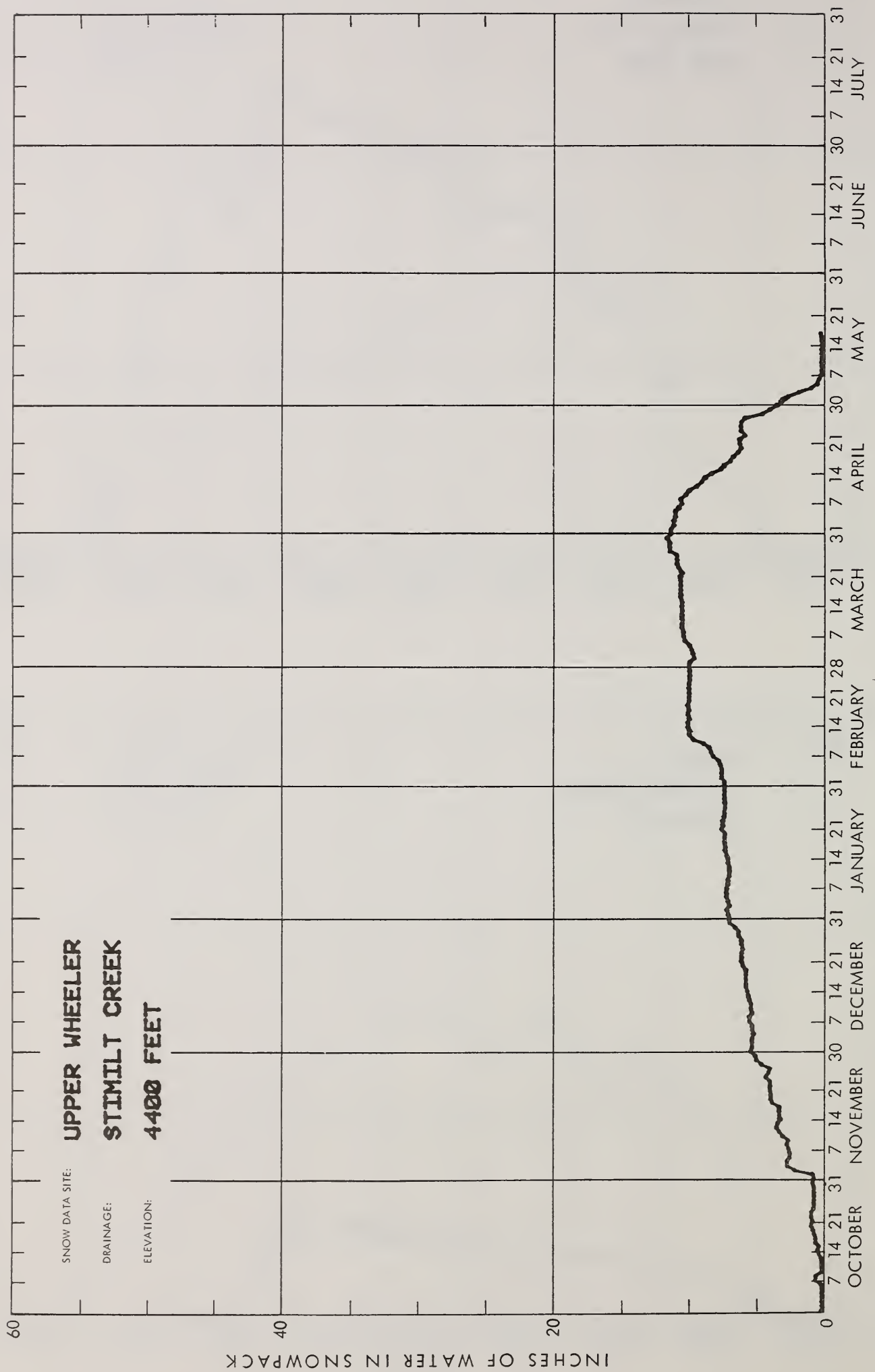












Agencies Assisting with Snow Surveys

GOVERNMENT AGENCIES

Canada:

Ministry of the Environment, Water
Investigations Branch, Victoria, British Columbia

States:

Washington State Department of Ecology
Washington State Department of Natural Resources

Federal:

Department of the Army
Corps of Engineers
U.S. Department of Agriculture
Forest Service
U.S. Department of Commerce
NOAA, National Weather Service
U.S. Department of the Interior
Bonneville Power Administration
Bureau of Reclamation
Geological Survey
National Park Service

PUBLIC AND PRIVATE UTILITIES

Chelan County P.U.D.
Pacific Power and Light Company
Puget Sound Power and Light Company
Washington Water Power Company

OTHER PUBLIC AGENCIES

Okanogan Irrigation District
Wenatchee Heights Irrigation District

MUNICIPALITIES

City of Tacoma
City of Seattle

Other organizations and individuals furnish valuable information for snow survey reports. Their cooperation is gratefully acknowledged.

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supply, hydro-electric power
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with the Snow Survey"*

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